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DECEMBER 1973

Stuart G. Hibben

Informatics, Incorporated

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <b>This is the Soviet Laser Bibliography for the fourth quarter of 1973 and is No. 14 in the series on Soviet laser developments. The coverage includes basic research on solid state, liquid, gas, and chemical lasers; components; nonlinear optics; spectroscopy of laser materials; ultrashort pulse generation; crystal growing; theoretical aspects of advanced lasers; and general laser theory. Laser applications are listed under biological effects; communications; computer technology; holography; laser-induced chemical reactions; instrumentation and measurements; beam-target interaction; and plasma generation and diagnostics.</b>		

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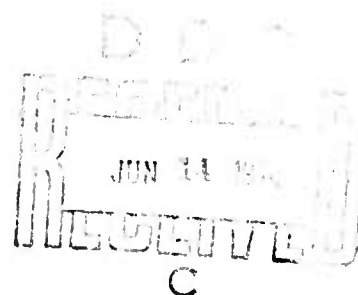
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Stuart G. Hibben  
Tel.: (301) 770-3000  
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**informatics inc** ● Systems and Services Company  
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## Introduction

This bibliography has been compiled by the staff of Informatics Inc. in response to a continuing contractual assignment to monitor current Soviet-bloc developments in the quantum electronics field. Of all material reviewed, the major yield has been from the approximately 30 periodicals which are known to report the most advanced and interesting findings in Soviet laser technology.

The period covered is the fourth quarter of 1973, and includes all significant laser-related articles received by us during that interval. The structure and selection criteria are basically those used in the preceding reports.

For convenience we have abbreviated frequently cited source names; a source abbreviation list and an author index are included. Unless indicated by a parenthesized (RZh, KL) notation, all cited sources are available at Informatics Inc. The numbers in parentheses following the authors' names in the text refer to the Cumulative Affiliations List which includes all author affiliations from 1969 to the present.

Acknowledgement is due to the consultant effort of Mr. Yuri Ksander of the Rand Corporation for assistance in selection and structure of the material.

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## I. BASIC RESEARCH

### A. SOLID STATE LASERS

#### 1. Crystal: Ruby

1. Antsiferov, V. V., V. S. Pivtsov, V. D. Ugozhayev, and K. G. Folin (0). Spike structure of solid state laser radiation. IN: Sb 1, 57-65.
2. Baican, R., and D. Demco (NS). Inversion ratio for a "push-pull" ruby maser. Rev. roum. phys., v. 18, no. 4, 1973, 523-530. (RZhF, 11/73, no. 11Zh44)
3. Boyko, B. B., N. S. Petrov, V. A. Andreichev, V. Ye. Matyushkov, and L. S. Kirochkin (0). Single-pulse laser with a two-section resonator. ZhPS, v. 19, no. 6, 1973, 1010-1013.
4. Gorban', I. S., and G. L. Kononchuk (0). The electron component in the change in refractive index of ruby under pumping. IN: Sb 3, 123-129.
5. Korniyenko, L. S., N. V. Kravtsov, and N. I. Naumkin (0). Development of generation in a laser with a bleachable filter. RiF, no. 12, 1973, 2554-2557.
6. Krivoshchekov, G. V., V. K. Makukha, V. S. Smirnov, and M. F. Stupak (0). Spectral-kinetic features of ruby laser radiation exposed to an external signal. IN: Sb 1, 105-106.
7. Leontovich, A. M., Ye. D. Bayeva, and A. M. Mozharovskiy (0). Generation in a ruby laser with a passive switch at low temperature. IN: Sb 2, 106-108.

8. Rubinov, A. N., and I. M. Korda (0). Nonlinear total external reflection and its use in mode locking a ruby laser. IN: Sb 2, 96-97.
9. Vasil'yev, I. V., G. M. Zverev, V. I. Marin, T. N. Mikhaylova, and V. A. Pashkov (0). Optical homogeneity of ruby elements, and generation losses. IN: Sb 1, 126-129.

## 2. Crystal: Rare Earth Activated

### a. Nd<sup>3+</sup>

10. Bagdasarov, Kh. S., A. A. Kaminskiy, A. M. Kevorkov, A. M. Prokhorov, S. E. Sarkisov, and T. A. Tevosyan (13, 1). Laser properties of Y<sub>2</sub>SiO<sub>5</sub>: Nd<sup>3+</sup> crystal operating on  $^4F_{3/2} \rightarrow ^4I_{11/2}$  and  $^4F_{3/2} \rightarrow ^4I_{13/2}$  transitions. DAN SSSR, v. 212, no. 6, 1973, 1326-1327.
11. Kaminskiy, A. A., P. V. Klevtsov, L. Li, A. A. Pavlyuk, and S. E. Sarkisov (13, 77). Study of stimulated emission from KLa(MoO<sub>4</sub>)<sub>2</sub> crystals with Nd<sup>3+</sup> ions. NM, no. 11, 1973, 2059-2061.
12. Kaminskiy, A. A., and S. E. Sarkisov (0). Study of stimulated emission of Nd<sup>3+</sup> ions in  $^4F_{3/2} \rightarrow ^4I_{13/2}$  transition crystals. Part 4. IN: Sb 1, 106-108.

13. Kevorkov, A. M., A. A. Kaminskiy, Kh. S. Bagdasarov, T. T. Tevosyan, and S. E. Sarkisov (13). Spectroscopic properties of  $\text{SrAl}_4\text{O}_7:\text{Nd}^{3+}$  crystals. NM, no. 10, 1973. 1839-1840.
14. Korniyenko, L. S., N. V. Kravtsov, and A. N. Shelayev (0). Some characteristics of a c-w solid state ring laser. OiS, v. 35, no. 4, 1973, 775-776.
15. Mikaelyan, A. L., V. M. Gardash'yan, V. V. D'yachenko, A. N. Filatov, and P. P. Tsarev (0). Methods for determining the parameters of a YAG crystal and study of their effects on the characteristics of laser radiation. IN: Sb 2, 13-19.
16. Shchavelev, O. S., V. A. Babkina, and Z. S. Mal'tseva (7). Thermooptic properties, coefficient of expansion and index of refraction of YAG. OMP, no. 10, 1973, 30-31.
17. Voron'ko, Yu. K., T. G. Mamedov, V. V. Osiko, M. I. Timoshechkin, and I. A. Shcherbakov (1). Effect of donor-donor and donor-acceptor interactions on decay kinetics of the metastable state of  $\text{Nd}^{3+}$  in crystals. ZhETF, v. 65, no. 3, 1973, 1141-1156.
- b.  $\text{Dy}^{3+}$
18. Antonov, V. A. (19), P. A. Arsen'yev (19), K. E. Bienert (NS), and A. V. Potemkin (19). Spectral properties of rare earth ions in  $\text{YAlO}_3$  crystals. PSS(a), v. 19, no. 1, 1973, 289-299.
19. Dzhibladze, M. I., L. E. Lazarev, A. N. Mestvirishvili, T. Ya. Chelidze, and Z. G. Esiashvili (39). Effect of Q-switching in solid state lasers in a free-running regime. AN GruzSSR. Soobshcheniya, v. 71, no. 3, 1973, 581-584.

c. Eu<sup>3+</sup>

20. Razvina, T. I., V. S. Khomenko, V. V. Kuznetsova, and R. A. Puko (0). Effect of structural factors on the spectral-luminescence properties of the Eu<sup>3+</sup> ion in complexes with acetylacetone. ZhPS, v. 19, no. 5, 1973, 866-871.

d. Ho<sup>3+</sup>

21. Bagdasarov, Kh. S., A. A. Kaminskiy, A. M. Kevorkov, S. E. Sarkisov, and T. A. Tevosyan (13). Stimulated emission from (Er, Lu) AlO<sub>3</sub> crystals with Ho<sup>3+</sup> and Tu<sup>3+</sup> ions. Kristal, no. 5, 1973, 1083-1084.

### 3. Crystal: Miscellaneous

22. Avanesyan, Kh. S., V. A. Benderskiy, V. Kh. Brikshteyn, V. L. Broude, and A. G. Lavrushko (67). Stimulated emission in anthracene crystals with tetracene impurities. PSS(a), v. 19, no. 2, 1973, K121-K123.
23. Klochan, Ye. L., L. S. Korniyenko, N. V. Kravtsov, Ye. G. Lariontsev, and A. N. Shelayev (98). Lasing regime of a solid state rotating ring laser. ZhETF, v. 65, no. 4, 1973, 1344-1356.
24. Manuil'skiy, A. D., S. G. Odulov, and M. S. Soskin (0). Stimulated emission in solids from internal types of vibrations. IN: Sb 3, 3-29.
25. Verkhovets, M. N., A. A. Kamarzin, and V. V. Sokolov (77). Study of fusibility diagrams in La<sub>2</sub>S<sub>3</sub>-La<sub>2</sub>O<sub>3</sub>, La<sub>2</sub>S<sub>3</sub>-LaF<sub>3</sub>, and La<sub>2</sub>O<sub>3</sub>-LaF<sub>3</sub> systems. Sibirskoye otdeleniye AN SSSR. Izvestiya, no. 14, Seriya khimicheskikh nauk, no. 6, 1973, 125-126.

#### 4. Semiconductor: Simple Junction

##### a. GaAs

26. Akimov, Yu. A., A. A. Burov, O. I. Govorkov, Ye. A. Zagarinskiy, I. V. Kryukova, G. V. Rodichenko, and B. M. Stepanov (141). Electron-pumped semiconductor lasers with wideband systems of radiation intensity modulation. IN: Tr 1, 204-209. (RZhRadiot, 11/73, no. 11Ye63)
27. Glinchuk, K. D., N. M. Litovchenko, and V. E. Rodionov (6). Recombination of electrons and holes in laser-pumped GaAs. PSS(a), v. 19, no. 2, 1973, K129-K132.
28. Kobak, I. A., I. S. Manak, Yu. V. Popov, and A. F. Shilov (87). Time characteristics of GaAs lasers at currents near threshold. FTP, no. 11, 1973, 2070-2073.
29. Voskoboynikova, I. V., V. I. Pakhomov, A. I. Petrov, and V. I. Shveykin (18). Structure of the diffusion layers in GaAs single crystals. NM, no. 11, 1973, 1878-1882.

##### b. InSb

30. Grischechkina, S. P., and A. P. Shotov (1). Radiation line shift in InSb injection lasers from increased concentration of acceptor impurities. KSpF, no. 7, 1973, 33-36.

#### 5. Semiconductor: Mixed Junction

31. Alfeyorov, Zh. I., D. Z. Garbuzov, V. A. Mishurnyy, V. D. Rummyantsev, and D. N. Tret'yakov (4). Luminescence properties of  $\text{Ga}_{1-x}\text{In}_x\text{P}$  solid solutions at  $0.45 < x < 0.50$ . FTP, no. 12, 1973, 2305-2311.

#### 6. Semiconductor: Heterojunction

32. Alfeyorov, Zh. I., D. Z. Garbuzov, P. S. Kop'yev, V. I. Korol'kov, G. M. Mirianashvili, T. D. Mkheidze, R. A. Charmakadze, and R. I. Chikovani (4). LED's based on heterojunctions of a GaAs-AlAs system. ZhTF, no. 11, 1973, 2413-2419.

#### 7. Semiconductor: Theory

33. Akkerman, D., P. G. Yelisseyev, M. A. Man'ko, E. Raab, Chan Min' Tkhay, A. V. Khaydarov, and N. N. Shuykin (1). Spectral selection in semiconductor injection lasers by means of a diffraction lattice. KSpF, no. 6, 1973, 9-12.
34. Kuznetsova, Ye. M. (0). Generation of coherent light in a semiconductor (0). IVUZ Fiz, no. 11, 1973, 130-134.
35. Nasibov, A. S., V. I. Kozlovskiy, and V. P. Papusha (0). Study of the characteristics of a cathode ray tube with a laser screen. RiF, no. 10, 1973, 2151-2157.
36. Yelisseyev, P. G., and N. N. Shuykin (0). Single mode and single frequency injection lasers (review). IN: Sb 1, 5-26.

## 8. Nd: Glass

37. Bubnov, M. M., I. M. Buzhinskiy, Ye. M. Dianov, S. K. Mamonov, L. I. Mikhaylova, and A. M. Prokhorov (0). Improving the luminance of neodymium glass lasers by selecting the composition of the active element matrix. IN: Sb 2, 113-115.
38. Galant, Ye. I., Yu. N. Kondrat'yev, A. K. Przhevuskiy, T. I. Prokhorova, M. N. Tolstoy, and V. N. Shapovalov (0). Stimulated emission of neodymium ions in quartz glass. ZhETF P, v. 18, no. 10, 1973, 635-637.

## B. LIQUID LASERS

### 1. Organic Dyes

#### a. Rhodamine

39. Anufrik, S. S., M. V. Belokon', V. A. Mostovnikov, A. N. Rubinov, and V. S. Strizhnev (0). Study of the quenching effect on the efficiency of stimulated emission in rhodamine dyes. IN: Sb 4, 79. (RZhRadiot, 2/73, no. 2Ye18)
40. Aristov, A. V., and Yu. S. Maslyukov (0). Study of amplification and initiation of absorption in organoluminophor solutions. OiS, v. 35, no. 6, 1973, 1138-1141.
41. Belokon', M. V., and A. N. Rubinov (3). Organic dye solution converter attachment to the LGI-21 nitrogen laser. PTE, no. 5, 1973, 191-192.

42. Lebedev, S. A., V. M. Volkov, and B. Ya. Kogan (0). Magnitude of optical gain during internal reflection from a medium with population inversion. OiS, v. 35, no. 5, 1973, 976-978.
  43. Rubinov, A. N., I. Kechkemeti, and L. V. Kozma (0). Effect of anti-Stokes decrease in quantum yield from luminescence of dyes on their laser efficiency. IN: Sb 4, 78. (RZhRadiot, 2/73, no. 2Ye5)
- b. Polymethine
44. Bonch-Bruyevich, A. M., T. K. Razumova, and I. O. Starobogatov (0). Study of the broadening character of energy states of polymethine dye solutions. OiS, v. 35, no. 4, 1973, 640-645.
  45. Bonch-Bruyevich, A. M., T. K. Razumova, and G. M. Rubanova (0). Study of induced absorption in polymethine dye solutions. OiS, v. 35, no. 5, 1973, 832-840.
- c. Phthalimide
46. Pikulik, L. G., A. I. Maksimov, and K. I. Rudik (0). Study of the polarization of stimulated emission in phthalimide solutions. ZhPS, v. 19, no. 6, 1973, 1025-1029.
  47. Zabiyaikin, Yu. Ye., V. S. Smirnov, and N. G. Bakhshiyev (0). Experimental study of the generation characteristics of substituted phthalimide solutions under flashlamp pumping. OiS, v. 35, no. 5, 1973, 958-959.
- d. Phthalocyanine
48. Kovalev, A. A., V. A. Pilipovich, and Yu. V. Razvin (299). Nonstationary induced losses in phthalocyanine dye solution lasers. IAN B, no. 6, 1973, 83-86.



e. Pyrazoline

49. Kerimbekov, A. V., M. M. Loyko, S. A. Il'ina, N. A. Kerimbekova, N. A. Lodygin, and A. N. Rubinov (301). Structure of pyrazolines and their generation capabilities. IN: Tr 2, 119-120. (RZhKh, 19ABV, 23/73, no. 23B1354).

f. Miscellaneous Dyes

50. Bakhshiyev, N. G. (0). Intermolecular relaxation-fluctuation processes and stimulated emission spectra in solutions. IN: Sb 4, 108. (RZhRadiot, 2/73, no. 2Ye12)
51. Batyrev, V. A., A. N. Rubinov, and T. Sh. Efendiyev (0). Kinetics of the stimulated emission spectrum in organic dye solutions. IN: Sb 4, 107. (RZhRadiot, 2/73, no. 2Ye17)
52. Borisevich, N. A., V. V. Gruzinskiy, S. V. Davydov, and N. M. Paltarak (0). Spectral-time characteristics of lasing in organic compound solutions. IN: Sb 4, 77. (RZhRadiot, 2/73, no. 2Ye15)
53. Borisevich, N. A., I. I. Kalosha, and V. A. Tolkachev (0). Generation in complex organic molecules in the gaseous phase. ZhPS, v. 19, no. 6, 1973, 1108-1109.
54. Dzyubenko, M. I., A. M. Korobov, and I. G. Naumenko (0). Study of pumping systems for organic dye solution lasers. IN: Sb 3, 129-135.
55. Gandel'man, I. L., and Ye. A. Tikhonov (5). Mode-locking in a dye laser with nanosecond pulse pumping. UFZh, no. 10, 1973, 1730-1732.

56. Rubinov, A. N., and T. Sh. Efendiyev (0). Generation in a dye solution using reflection from a nonlinear self-generated mirror. IN: Sb 1, 129-130.
57. Stepanov, B. I., and A. N. Rubinov (3). The continuously tunable dye laser. Priroda, no. 9, 1973, 42-50.
58. Uvarov, V. N. (0). Effect of nonuniform broadening on the lasing characteristics of organic dyes. IN: Sb 4, 253. (RZhRadiot, 2/73, no. 2Ye23)

## 2. Inorganic Compounds

59. Zabiyaikin, Yu. Ye., V. S. Smirnov, and N. G. Bakhshiyev (0). Generation in pyrilium perchlorate solutions under flashlamp pumping. Ois, v. 35, no. 6, 1973, 1167-1168.

## 3. Miscellaneous Liquids

60. Teslenko, V. S., and A. Ye. Kurepina (0). Photohydrodynamic effects on the operational stability of liquid lasers. IN: Sb 4, 82. (RZhRadiot, 2/73, no. 2Ye8)
61. Zhabotinskiy, M. Ye. S. L. Krayevskiy, and Yu. S. Milyavskiy (0). Role of uranyl as a quencher of  $\text{Eu}^{3+}$  luminescence in solutions. ZhPS, v. 19, no. 5, 1973, 923-925.

## C. GAS LASERS

### 1. Simple Mixtures

#### a. He-Ne

62. Bobrik, V. I., Yu. D. Kolomnikov, and V. P. Chebotayev (0). He-Ne laser with delay lines in a nonlinearly absorbing gas. OIS, v. 35, no. 6, 1973, 1179-1180.
63. Grimblatov, V. M., Ye. P. Ostapchenko, and V. V. Teselkin (0). Spectral study of generation from coupled transitions in gas lasers. IN: Sb 1, 40-45.
64. Kulke, D. (NS). He-Ne\* and Ne-Ne\* collisions in a helium-neon laser at 0.63  $\mu$ . IN: Sb 1, 97-99.
65. Lebedeva, L. M., V. G. Leont'yev, L. N. Orlov, Ye. P. Ostapchenko, and A. I. Ryabov (0). Temperature effect on the generation power of a He-Ne laser. ZhPS, v. 19, no. 5, 1973, 911-913.
66. Leykin, A. Ya., V. S. Solov'yev, and A. M. Fisher (0). Stabilization of He-Ne laser generation frequency from 0.63  $\mu$  to 3.39  $\mu$ . IT, no. 9, 1973, 29-30.
67. Nowicki, R. (NS). Methods for stabilizing power fluctuations of high power He-Ne lasers. IN: Pr. nauk. Inst. telekomun. i akust. PWr., no. 14, 1973, 35-48. (RZhF, 11/73, no. 11D1388)
68. Percak, H. (NS). A thermoregulator for single mode He-Ne lasers. Part 2. Construction and results of the measurements. IN: Pr. nauk. Inst. telekomun. i akust. PWr., no. 14, 1973, 107-121. (RZhF, 11/73, no. 11D1454)

69. Troitskiy, Yu. V. (0). Study of the generation spectrum in a helium-neon laser. IN: Sb 1, 35-39.
70. Vinogradov, V. I. (0). Measuring the dispersion in a constant-current discharge in Ne and He-Ne at 0.63 and 1.15  $\mu$ . OiS, v. 35, no. 4, 1973, 614-618.
71. Vol'nov, M. I. (1). Highly stable [He-Ne] gas laser. VDNKh, no. 10, 1973, 35-36.
72. Yudin, V. I. (0). Study of a He-Ne laser with high-frequency excitation. IN: Sb 1, 134-136.
73. Zakharenko, Yu. G., and V. Ye. Privalov (0). Vibrations in the discharge space of a He-Ne laser, and their effect on the radiation parameters. OiS, v. 35, no. 4, 1973, 750-758.

b. He-Se

74. Kalchev, S. D., Y. Kh. Pacheva, and N. V. Sabotinov (NS). Study of the oscillation spectrum of a He-Se gas laser. DBAN, no. 10, 1973, 1323-1326.

## 2. Molecular Beam and Ion

a. CO<sub>2</sub> Mixtures

75. Avtonomov, V. P., Ye. T. Antropov, N. D. Goldina, A. V. Gorelik, N. N. Sobolev, Ye. P. Ostapchenko, and Yu. T. Troitskiy (0). Separation of vibrational-rotational lines in a CO<sub>2</sub> laser by a diffraction selector in the resonator. IN: Sb 2, 108-110.

76. Baranov, V. Yu., V. M. Borisov, and A. P. Strel'tsov (0). High pressure pulsed CO<sub>2</sub> laser with pre-ionization at the cathode. PTE, no. 5, 1973, 188-190.
77. Basov, N. G., E. M. Belenov, V. A. Danilychev, O. M. Kerimov, I. B. Kovsh, A. S. Podsonnyy, and A. F. Suchkov (0). Gain in the active medium of a CO<sub>2</sub> electroionization laser. IN: Sb 1, 46-50.
78. Basov, N. G., V. A. Danilychev, A. A. Ionin, I. B. Kovsh, and V. A. Sobolev (1). Pulsed electroionization laser with energy of 20 joules. ZhTF, no. 11, 1973, 2357-2363.
79. Bazarov, Ye. N., N. Shukurov, and Ye. M. Cherkasov (300). Experimental studies of an atmospheric air CO<sub>2</sub> chemical laser. IAN Uzb, no. 5, 1973, 49-54.
80. Bychkov, Yu. I., V. V. Osipov, and V. F. Tarasenko (0). Pulsed CO<sub>2</sub> laser excited by a double discharge. IN: Sb 1, 122-124.
81. Ivanov, V. A., A. Ya. Leykin, V. S. Solov'yev, and V. G. Pavlov (0). A method for frequency stabilization of a CO<sub>2</sub> laser. IN: Sb 1, 133-134.
82. Kompanets, O. N., A. R. Kukudzhanov, V. S. Letokhov, and Ye. I. Mikhaylov (0). Frequency stabilization in a CO<sub>2</sub> laser by means of an SF<sub>6</sub> external nonlinear absorption cell. IN: Sb 2, 28-34.
83. Konovalov, I. N., Yu. A. Kurbatov, V. M. Orlovskiy, and V. V. Savin (0). Pump threshold energy in a high pressure pulsed electroionization CO<sub>2</sub> laser. IN: Sb 1, 112-115.
84. Margulis, V. M., A. D. Margolin, and Z. I. Kaganova (0). Field of concentrations of excited molecules in a diffusion CO<sub>2</sub>-N<sub>2</sub> laser. FGiV, no. 6, 1973, 818-822.

85. Orishich, A. M., A. G. Ponomarenko, and R. I. Soloukhin (193). Energy characteristics and stability of a double transverse discharge during pumping of a CO<sub>2</sub> laser. DAN SSSR, v. 212, no. 5, 1973, 1099-1102.
  86. Pogosyan, K. P., and A. S. Abramyan (37). Selection of axial vibration types in a CO<sub>2</sub>-N<sub>2</sub>-He laser with a three-mirror resonator. IN: Tr 3, 143-147. (RZhF, 9/73, no. 9D753)
  87. Pugnin, V. I., I. M. Sel'dimirov, E. G. Senyutovich, and A. N. Tekuchev (128). Study of the effect of xenon on the population inversion of vibrational levels of a CO<sub>2</sub> molecule in the discharge of a CO<sub>2</sub>+He+Xe mixture. IN: Tr 4, 69-77. (RZhF, 9/73, no. 9D752)
  88. Zaroslov, D. Yu., Ye. K. Karlova, N. V. Karlov, I. O. Kovalev, G. P. Kuz'min, and R. P. Petrov (0). Shape and energy of the radiation pulse of a TEA CO<sub>2</sub> laser with spirally placed electrodes. IN: Sb 1, 116-119.
- b. CO
89. Leshenyuk, N. S., and L. N. Orlov (3). Calculating the temperature field of CO lasers. ZhTF, no. 11, 1973, 2382-2387.
  90. Pugnin, V. I., I. M. Sel'dimirov, and A. N. Tekuchev (128). Measuring the populations of electron states of the CO molecule in a positive discharge column of CO<sub>2</sub>, CO<sub>2</sub>+N<sub>2</sub>, and CO<sub>2</sub>+He. IN: Tr 4, 63-69. (RZhF, 9/73, no. 9G113)
- c. Noble Gas
91. Alferov, G. N., V. I. Dokin, and B. Ya. Yurshin (10). A c-w argon laser with output power of 0.5 kw. ZhETF P, v. 18, no. 10, 1973, 629-631.

92. Fotiadi, A. E., and S. A. Fridrikhov (0). Study of radiation polarization from a c-w argon laser in a transverse magnetic field. OIS, v. 35, no. 5, 1973, 961-963.
  93. Rostovikova, G. S., V. P. Samoylov, and Yu. M. Smirnov (0). Measuring the cross-section of excitation of KrII and KrIII lines by electron shock. OIS, v. 35, no. 6, 1973, 1031-1036.
  94. Terletskiy, A. Ya. (2). Effect of an external magnetic field on radiation from a krypton ion laser. VMU, no. 4, 1973, 496-498.
  95. Vasil'yev, A. M., S. T. De, and A. V. Loginov (0). Laboratory ion laser. IN: Sb 5, 219-221. (RZhRadiot, 12/73, no. 12Ye2)
  96. Zvorykin, V. D., A. D. Klementov, N. G. Kulikovskiy, and V. B. Rozanov (0). Characteristics of a heavy current discharge in neon at low pressure. IN: Sb 2, 43-49.
- d. N<sub>2</sub>
97. Magda, I. I., Yu. V. Tkach, Ye. A. Lemberg, G. V. Skachek, N. P. Gadetskiy, A. V. Sidel'nikova, V. V. Dyatlova, and Ya. Ya. Bessarab (0). High-power pulsed nitrogen and neon gas lasers. IN: Sb 1, 119-122.
  98. Taraserko, V. F., Yu. I. Bychkov, V. F. Losev, and A. I. Fedorov (0). Characteristics of a high power nitrogen laser. IN: Sb 1, 103-105.
- e. Metal Vapor
99. Bazarov, Ye. N., V. P. Gubin, and G. I. Telegin (0). Experimental study of frequency shifts at the  $S_{1/2}, F = 2, m_F = 0 \leftrightarrow S_{1/2}, F = 1, m_F = 0$  transition in Rb<sup>87</sup> atoms under pulsed optical pumping. RiE, no. 10, 1973, 2083-2088.

100. Isayev, A. A., M. A. Kazaryan, and G. G. Petrash (0). Pulsed generation at transitions with resonance at the metastable level in barium vapor. IN: Sb 2, 123-125.
  101. Subotinov, N. V., P. K. Telbizov, and S. D. Kalchev (NS). Features of the construction and study of a He-Cd-Se laser. ZhTF, no. 12, 1973, 2621-2624.
  102. Tibilov, A. S., M. I. Shevtsov, and A. M. Shukhtin (0). Use of a pulsed laser for determining the cross-section of excitation energy transfer from collisions in Cd-He. Ois, v. 35, no. 4, 1973, 626-629.
- f. Gasdynamic
103. Biryukov, A. S., and L. A. Shelepin (0). Role of nonresonance exchange processes in gasdynamic lasers. ZhPMTF, no. 4, 1973, 25-32.
  104. Gavrikov, V. F., A. P. Dronov, A. K. Piskunov, and Ye. M. Cherkasov (0). Nonequilibrium flow in a gasdynamic laser. IN: Sb 1, 109-112.
  105. Gembarzhevskiy, G. V., N. A. Generalov, and G. I. Kozlov (0). Experimental studies of optical gain in  $\text{CO}_2 + \text{N}_2 + \text{He}(\text{H}_2\text{O})$  mixtures during expansion in a supersonic jet nozzle. ZhPMTF, no. 4, 1973, 18-24.
  106. Kudryavtsev, Ye. M. (248).  $\text{CO}_2$  gasdynamic laser. IN: Tr 5, 107-118. (RZhF, 9/73, no. 9D760)
  107. Kudryavtsev, Ye. M., and V. N. Fayzulayev (0). Obtaining inversion in a  $\text{CO}_2 - \text{H}_2\text{O} - \text{N}_2$  gas mixture jet expanding through a slit. ZhPMTF, no. 6, 1973, 25-31.



108. Losev, S. A. (0). Kinetics of relaxation processes in shock waves and cooled gas flows. FGiV, no. 6, 1973, 767-772.
109. Losev, S. A. (248). Gasdynamic lasers based on electron transitions. IN: Tr 5, 123-127. (RZhF, 9/73, no. 9D761)
110. Platonenko, V. T. (248). Closed cycle gasdynamic lasers and photon turbines. IN: Tr 5, 119-122. (RZhMekh, 9/73, no. 9B679)
111. Yevtyukhin, N. V., S. A. Losev, V. N. Makarov, V. A. Pavlov, and M. S. Yalovik (0). Study of the vibrational deactivation of CO<sub>2</sub> gas molecules during cooling of the flow in a supersonic jet nozzle. ZhPMTF, no. 6, 1973, 32-40.

### 3. Ring Lasers

112. Burnashev, M. N., and Yu. V. Filatov (163). Dependence of the frequency characteristics of a gas ring laser on the excess of amplification over loss. ZhTF, no. 11, 1973, 2364-2366.
113. Burnashev, M. N., and Yu. V. Filatov (0). Decoupling of opposed waves by a diaphragm in a gas ring laser at 0.63  $\mu$ . OiS, v. 35, no. 5, 1973, 992-994.
114. Gudkov, Yu. P., and N. N. Rozanov (0). Theory of the lock-in phenomenon in a gas ring laser. Part 1. OiS, v. 35, no. 4, 1973, 736-745.
115. Gudkov, Yu. P. (0). Theory of the lock-in phenomenon in a gas ring laser. Part 2. OiS, v. 35, no. 5, 1973, 919-928.

116. Sokolov, V. A., and E. Ye. Fradkin (12). Theory of a two-mode generation regime in a gas ring laser. ZhTF, no. 11, 1973, 2367-2374.

#### 4. Theory

117. Alimpiyev, S. S., and N. V. Karlov (0). Effect of self-induced transparency and photon echo in  $\text{BCl}_3$  and  $\text{SF}_6$  molecular gases. IN: Sb 4, 115-116. (RZhRadiot, 2/73, no. 2Ye16)
118. Gershenzon, Yu. M., V. I. Yegorov, and V. B. Rozenshteyn (67). Determining the accommodation coefficient of vibrational energy of nitrogen molecules on the surface of molybdenum glass. KhVE, no. 6, 1973, 533-536.
119. Kats, M. L., V. A. Sedel'nikov, and V. V. Tuchin (0). Radiation fluctuations in a two-mode gas laser. RiE, no. 10, 1973, 2089-2096.
120. Rubin, P. L. (0). Interaction between longitudinal vibrations in a gas laser and a rapidly decomposable lower level. IN: Sb 1, 27-34.
121. Vdovin, Yu. A., M. A. Gubin, V. M. Yermachenko, and Ye. D. Protsenko (0). Mode interaction of orthogonal and parallel polarizations in a gas laser. IN: Sb 2, 35-42.

## D. CHEMICAL LASERS

### 1. $F_2 + H_2(D_2)$

122. Basov, N. G., V. A. Danilychev, O. M. Kerimov, K. K. Mal'tsev, Ye. P. Markin, A. N. Orayevskiy, and A. S. Podsonnyy (1).  $F_2 + D_2 + CO_2 + He$  chemical electroionization laser. KSpF, no. 7, 1973, 25-27.
123. Igoshin, V. I., L. V. Kulakov, and A. I. Nikitin (0). Measuring the chemical reaction rate of  $F + H_2(D_2) \rightarrow HF(DF) + H(D)$  by stimulated emission in  $HF(DF)$  molecules. IN: Sb 2, 50-59.
124. Podminogin, A. A. (0).  $HF(DF)$  pulsed laser. IN: Sb 1, 88-90.

### 2. $CS_2 + O_2$

125. Gordon, Ye. B., M. S. Drozdov, Yu. L. Moskvina, and V. L. Tal'roze (67). Super-stable UV radiation from spontaneous combustion of a  $CS_2 + 4O_2$  mixture at atmospheric pressure. ZhETF P, v. 18, no. 9, 1973, 560-563.

### 3. Photodissociative

126. Bazhutina, S. A., V. S. Letokhov, A. A. Makarov, and V. A. Semchishen (72). Selective predissociation of ortho- $I_2$  molecules by laser radiation. ZhETF P, v. 18, no. 8, 1973, 515-519.

## E. COMPONENTS

### 1. Resonators

#### a. Design and Performance

127. Anan'yev, Yu. A., V. S. Sirazetdinov, V. N. Chernov, and O. A. Shorokhov (0). Stabilization effect of radiation directivity in prismatic unstable resonators. IN: Sb 1, 115-116.
128. Bandilla, A., W. Brunner, R. Fischer, and H. Paul (NS). Optical parametric generator. Otkr izobr, no. 43, 1973, no. 404293.
129. Belomestnov, P. I., Ye. I. Vyazovich, R. I. Soloukhin, and Yu. A. Yakobi (0). Tunable resonator with a variable curvature mirror. IN: Sb 2, 110-113.
130. Berndt, M., and A. Kristof (NS). Active element of a laser. Otkr izobr, no. 37, 1973, no. 397996.
131. Boyko, B. B., S. A. Mikhnov, V. Ye. Matyushkov, and V. A. Andreichev (0). Improving the energy parameters of single-pulse lasers by using a tunable telescopic system as resonator. ZhPS, v. 19, no. 5, 1973, 808-811.
132. Bulygin, N. V., Ye. A. Vinogradov, L. G. Gugel', Ye. M. Dianov, and N. A. Irisova (1). Open resonator for millimeter and submillimeter wavelength bands. Otkr izobr, no. 43, 1973, no. 293502.

#### b. Mode Kinetics

133. Melekhin, G. V. (0). Effect of resonator length on the interaction of standing waves for coupled beam paths. OiS, v. 35, no. 5, 1973, 984-985.

## 2. Q-Switches

134. Churakov, V. V. (0). Q-switching regime in a molecular laser with inhomogeneous line broadening. IN: Sb 4, 234. (RZhRadiot, 2/73, no. 2Ye22)
135. Klochkov, V. P., and V. L. Bogdanov (0). Study of Q-switching in a ruby laser by Cu-phthalocyanine vapor. ZhPS, v. 19, no. 6, 1973, 1014-1016.
136. Klose, E., S. Daene, and H. Duerr (NS). New dyes for passive switches in ruby lasers. IN: Sb 2, 5-12.
137. Kolesov, G. V., V. B. Lebedev, V. L. Milovidov, O. V. Milyutin, and V. S. Orlov (0). Pulse generator for high frequency Q-switching of a laser. PTE, no. 5, 1973, 120-121.
138. Nepodal, M. (NS). Rotating Q-switch for lasers. Patent Czechoslovakia no. 142071, published 15 July 1971. (RZhRadiot, 11/73, no. 11Ye145)
139. Popov, Yu. V., L. F. Klimenko, V. S. Kondrat'yev, and V. Ye. Terent'yev (0). Laser [with Q-switching synchronized with the flashlamp]. Otkr izobr, no. 37, 1973, 321182.

## 3. Pump Sources

140. Bradis, O. V., Yu. P. Andreyev, M. M. Bogorodskiy, and I. A. Semiokhin (2). Study of radiation from xenon flashlamps with admixtures of thallium iodide. VMU Khimiya, no. 5, 1973, 559-562.
141. Ignat'yev, V. G., and A. N. Tokareva (0). Effect of laser illuminator on the radiation characteristics of pulsed pump sources. ZhPS, v. 19, no. 4, 1973, 632-635.

142. Sereda, N. I., V. V. Sysun, B. V. Skvortsov, V. D. Fisher, and A. V. Tolstoshev (0). Lamp for optical pumping of lasers. Otkr izobr, no. 43, 1973, no. 333882.
143. Stefanov, V. Y. (NS). Hollow double-cylindrical coaxial flashlamp. Patent Bulgaria, no. 13357, published 30 July 1970. (RZhRadiot, 12/73, no. 12Ye25)

#### 4. Deflectors

144. Khadzhimukhamedov, Kh. Kh., and E. A. Sagatov (227). Scanning a laser beam in an ultrasonic field. IN: Tr 6, 104-110. (RZhRadiot, 12/73, no. 12Ye193)
145. Kol'tsov, I. M., V. L. Mamayev, V. P. Mikheyev, and B. S. Rozov (16). Optico-mechanical device for deflecting a light beam. PTE, no. 5, 1973, 213-214.
146. Mirovitskiy, D. I., V. F. Dubrovin, I. F. Budagyan, V. F. Chernyshov, and V. V. Usatyuk (161). Electrically controlled scanner for the optical band. Otkr izobr, no. 35, 1973, no. 395935.

#### 5. Attenuators

147. Voronkov, G. L. (0). Quartz attenuator for the infrared. IT, no. 9, 1973, 69-70.

#### 6. Filters

148. Shklyarevskiy, I. N., R. I. Umerov, M. A. Gisin, and E. D. Sitnikov (0). Study of the optical properties of special narrowband interference filters for the infrared region. OiS, v. 35, no. 4, 1973, 773-774.

## 7. Mirrors

149. Perveyev, A. F., E. I. Fadeyeva, and G. A. Muranova (7). Dielectric mirror using vacuum-deposited oxide films. OMP, no. 11, 1973, 66.

## 8. Detectors

150. Agafonov, V. G., P. M. Valov, B. S. Ryvkin, and I. D. Yaroshetskiy (4). Photodetectors based on optical drag from current carriers in semiconductors. FTP, no. 12, 1973, 2316-2325.
151. Aksyutov, L. N., and G. K. Kholopov (7). Methods for measuring nonlinearity in radiation detectors. OMP, no. 10, 1973, 42-47.
152. Belozarov, Ye. G., A. L. Logutko, N. M. Salanskiy, Yu. D. Samorodov, and V. A. Seredkin (0). Instrument with subnanosecond time resolution for studying weak optical fluxes. IN: Sb 6, 181-182. (RZhMetrolog, 9/73, no. 9.32.1203)
153. Bogdanov, Ye. P., V. I. Koptenko, L. I. Fedoseyev, and V. N. Shabanov (8). Detection of submillimeter radiation by means of W-Ge-Ni point contacts. IVUZ Radiofiz, no. 8, 1973, 1290-1292.
154. Bovina, L. A., V. P. Meshcheryakova, L. K. Klyukin, and V. I. Stafeyev (0). Photoelectric properties of p-n junctions in  $\text{Cd}_{1-x}\text{Hg}_x\text{Te}$ . FTP, no. 12, 1973, 2301-2304.
155. Gashin, P. A., and A. V. Simashkevich (151). ZnTe-CdSe hetero-junctions. Part 2. Photoelectric and luminescent properties. PSS(a), v. 19, no. 2, 1973, 615-623.

156. Klement'yev, V. M., and V. I. Kovalevskiy (0). High speed photodiode at 3.39  $\mu$ . RiE, no. 12, 1973, 2654-2655.
157. Korobkin, V. V., Yu. N. Serdyuchenko, and M. Ya. Shchelev (141). Electrooptical equipment of the Physics Institute, Academy of Sciences USSR. IN: Tr 7, 166-173. (RZhRadiot, 12/73, no. 12Yel85)
158. Kurashov, V. N. (0). Analysis of informational properties of quantum detectors of coherent optical signals. IN: Sb 3, 142-149.
159. Mart'yanov, A. N., and A. G. Sheremet'yev (0). Optimal detection of an optical signal. Problemy peredachi informatsii, no. 4, 1973, 88-89.
160. Troyepol'skiy, V. A., S. S. Khmelevtsov, and R. Sh. Tsvyk (78). Using a position-sensitive photodiode to record angles of arrival of optical radiation. IVUZ Fiz, no. 9, 1973, 149-151.
161. Vasil'yev, Yu. S., Yu. N. Gromov, S. A. Kaufman, L. N. Kurbatov, N. M. Privezentsev, N. Sh. Khaykin, G. T. Shamova, and B. V. Yurist (0). Heterodyne optical signal detector at 10.6  $\mu$ . IN: Sb 2, 86-91.
162. Zavertannaya, L. S., and A. L. Rvachev (200). Photoflux oscillations in CdS radiation detectors. FTP, no. 10, 1973, 1929-1935.

## 9. Modulators

163. Adrianova, I. I., A. A. Berezhnoy, Ye. V. Nefedova, V. A. Pis'mennyy, Yu. V. Popov, and K. P. Skornyakova (0). Control of optical radiation by means of lead magnesium-niobate crystals. OiS, v. 35, no. 5, 1973, 888-893.



164. Agrafenin, Yu. V., B. A. Bobylev, A. I. Kravchenko, and A. S. Terekhov (0). Optical modulator using the Franz-Keldysh effect. Mikroelektronika, v. 2, no. 4, 1973, 362-363. (RZhF, 11/73, no. 11Zh49)
165. Aksenov, Ye. T., V. A. Grigor'yev, N. A. Yesepkina, V. Yu. Petrun'kin, V. P. Pikarnikov, and S. V. Pruss-Zhukovskiy (0). Diffraction modulators of light with CdS thin film converters. IN: Sb 2, 127-129.
166. Aksenov, Ye. T., V. A. Grigor'yev, N. A. Yesepkina, V. Yu. Petrun'kin, V. P. Pikarnikov, and S. V. Pruss-Zhukovskiy (0). High frequency solid state ultrasonic modulator of light. IN: Sb 5, 160-164. (RZhRadiot, 12/73, no. 12Ye131)
167. Berezhnoy, A. A. (0). Features of the electrooptical effect in cubic crystals of lead magnesium niobate and zinc selenide, and their use in controlling laser radiation. IN: Sb 7, 83-84. (RZhRadiot, 11/73, no. 11Ye65)
168. Boltayev, A. P., V. A. Kurbatov, N. N. Solov'yev, and N. A. Penin (1). High frequency modulation of  $10 \mu$  radiation through heating the carrier by an electric field in p-type germanium. FTP, no. 10, 1973, 1896-1900.
169. Dudnik, O. F., Yu. L. Kopylov, and V. B. Kravchenko (15). Effective modulation of light by barium strontium niobate single crystals. ZhETF P, v. 18, no. 7, 1973, 407-409.
170. Maloch, J., Z. Stanek, B. Sestak, and K. Sobra (NS). Method for modulating the plasma in the discharge of a gas laser. Patent Czechoslovakia, no. 142687, published 15 September 1971. (RZhRadiot, 11/73, no. 11Ye164)

171. Mozhayskiy, V. N., V. M. Pankratov, and T. V. Petrova (0). LiNbO<sub>3</sub> crystal modulator of light. IN: Sb 2, 99-101.
172. Osipov, Yu. V. (7). Multichannel division of a laser beam by means of a scanning lens. OMP, no. 11, 1973, 12-14.
173. Ovvyan, P. P. (135). Electrooptic waveguide modulator. ZhTF, no. 11, 1973, 2402-2406.
174. Stoyanov, V. E. (NS). Mirror modulator for obtaining single light pulses. Author's certificate Bulgaria, no. 13636, published 15 December 1971. (RZhF, 9/73, no. 9A210)
175. Teleshevskiy, V. I. (0). Optical linear scales based on acoustic modulation of light. IT, no. 9, 1973, 26-29.
176. Tuchin, V. V. (0). Characteristics of frequency modulation of He-Ne laser radiation at 6328 Å. OiS, v. 35, no. 4, 1973, 746-749.
177. Zemlyachev, Ye. Z., and V. N. Parygin (2). Interference SHF modulator of light. VMU, no. 4, 1973, 426-430.
178. Zhilin, M. V., S. I. Nikanorov, and V. N. Parygin (0). Study of the physical operating conditions of an e-beam modulator of light using a KDP crystal. RiE, no. 9, 1973, 1881-1886.

## F. NONLINEAR OPTICS

### 1. Frequency Conversion

179. Ayvazyan, Yu. M., and B. N. Morozov (0). Conversion of ultrashort laser pulses to an r-f signal in dispersion waveguides. IN: Sb 1, 99-101.

180. Baysa, D. F., A. I. Barabash, V. P. Dem'yanenko, O. K. Zavediyeva, G. A. Puchkovskaya, Yu. A. Frolkov, and I. S. Rez (5). Study of the spectral characteristics of hexagonal and tetragonal modifications of lithium iodate. UFZh, no. 10, 1973, 1615-1624.
181. Belikova, G. S., M. P. Golovey, V. D. Shigorin, and G. P. Shipulo (1). Laser frequency doubling in meta-dinitrobenzene single crystals. KSpF, no. 6, 1973, 24-29.
182. Bespalova, M. P., G. A. Mishakov, and A. I. Pikhtelelev (0). Frequency shifts of the standard atomic transition in an Rb<sup>87</sup> passive frequency standard, occurring during optical pumping. RiE, no. 11, 1973, 2356-2363.
183. Bokut', B. V., Ye. F. Gorskiy, A. S. Lugina, and A. G. Khatkevich (0). Generating a difference frequency by mixing radiation from ruby and neodymium lasers in an LiNbO<sub>3</sub> crystal. ZhPS, v. 19, no. 4, 1973, 712-715.
184. Bokut', B. V., Ye. F. Gorskiy, A. S. Lugina, and A. G. Khatkevich (0). Lasing at the difference frequency during beam shift of ruby and neodymium lasers in an LiNbO<sub>3</sub> crystal. IN: Sb 4, 205. (RZhRadiot, 2/73, no. 2Ye11)
185. Bykovskiy, Yu. A., V. V. Berezovskiy, N. A. Blinov, M. I. Goncharov, and A. N. Remizov (0). Second harmonic generation in tellurium pumped by a CO<sub>2</sub> laser. IN: Sb 4, 143-144. (RZhRadiot, 2/73, no. 2Ye6)
186. Gapontsev, V. P., M. Ye. Zhabotinskiy, A. A. Izyneyev, V. B. Kravchenko, and Yu. P. Rudnitskiy (15). Effective conversion of 1.054 → 1.54 μ stimulated emission. ZhETF P, v. 18, no. 7, 1973, 428-431.

187. Graja, A. (NS). Second harmonic of light. PF, no. 5, 1973, 499-511.
188. Karpushko, F. V., A. S. Rubanov, and G. V. Sinitsyn (0). Interferometer-selector with piezoelectric control. ZhPS, v. 19, no. 6, 1973, 1134-1135.
189. Kazak, N. S., and A. G. Mashchenko (0). Tunable radiation in the 241-242 nm region. ZhPS, v. 19, no. 5, 1973, 914-915.
190. Kravchenko, V. I., A. A. Smirnov, S. P. Anokhov, and V. V. Tarabrov (0). Intraresonator harmonic generation in solid state lasers with dispersion resonators. IN: Sb 4, 136. (RZhRadiot, 2/73, no. 2Ye7)
191. Lisitsa, M. P., and I. V. Fekeshgazi (6). Angular dependence of the intensity of the second harmonic in nonlinear crystals with tetragonal symmetry. ZhTF, no. 10, 1973, 2153-2157.
192. Orlov, R. Yu., I. S. Rez, I. B. Skidan, L. S. Telegin, and A. A. Filimonov (0). Frequency doubling of picosecond pulses in a CDA crystal. ZhPS, v. 19, no. 4, 1973, 719-720.
193. Saltiyel, S. M., V. G. Tunkin, and T. Usmanov (0). Fifth harmonic generation in a picosecond laser. IN: Sb 4, 123. (RZhRadiot, 2/73, no. 2Ye19)
194. Soskin, M. S., V. Y. Kravchenko (V. I. Kravchenko), O. A. Smyrnov (A. A. Smirnov), V. V. Zayika (V. V. Zaika), and I. Sh. Shkolyar (0). The Oktava-2 three-band tunable laser. AN UkrRSR. Visnyk, no. 11, 1973, 103-106.

195. Voronin, E. S., A. A. Popesku, and V. S. Solomatin (0). Conversion of radiation in an  $\text{Ag}_3\text{AsS}_3$  crystal under orthogonal pump and signal beams. IN: Sb 4, 205. (RZhRadiot, 2/73, no. 2Ye9)

## 2. Parametric Processes

196. Deryugin, I. A., V. N. Kurashov, and A. I. Mashchenko (0). Effect of pumping field instability on the statistical characteristics of an optical signal in quantum parametric amplifiers. IN: Sb 3, 135-142.
197. Fischer, R., and J. Frahm (NS). Theory of four-photon parametric optical generators. IN: Sb 4, 171. (RZhRadiot, 2/73, no. 2Ye20)
198. Gorokhov, Yu. A., D. P. Krindach, V. S. Mayorov, and V. S. Shevera (0). Effect of heat interaction on parametric scattering of light. IN: Sb 4, 173. (RZhRadiot, 2/73, no. 2Ye10)
199. Klyshko, D. N., and N. I. Nazarova (2). Nonstationary parametric superluminescence. ZhTF, no. 10, 1973, 2158-2162.
200. Sukhorukov, A. P., and A. K. Shchednova (0). Joint effect of space and time modulation of a laser wave on parametric amplification. OiS, v. 35, no. 5, 1973, 929-933.
201. Sushchik, M. M., and G. I. Freydmann (0). Parametric interaction of weakly focused beams and the anomalous focusing effect. IN: Sb 4, 146-147. (RZhRadiot, 2/73, no. 2Ye14)
202. Sushchik, M. M., and V. M. Fortus (8). Efficiency of parametric conversion in high quality optical resonators. IVUZ Radiofiz, no. 10, 1973, 1522-1530.

### 3. Stimulated Scattering

#### a. Raman

203. Akanayev, B. A., and I. M. Bel'dyugin (0). Transverse mode-locking in a Raman laser. IN: Sb 2, 69-75.
204. Akhmanov, S. A., and Yu. Ye. D'yakov (2). Saturation effects during stimulated Raman scattering and resonance absorption (or amplification) in a strong nonmonochromatic field. ZhETF P, v. 18, no. 8, 1973, 519-522.
205. Bel'dyugin, I. M., Ya. Z. Virnik, Ye. I. Yegoshin, Ye. M. Zemskov, and I. A. Fedulov (0). A possibility for stabilizing the generation regime of a Raman laser at the first Stokes frequency. IN: Sb 2, 118-120.
206. Dobrzhanskiy, G. F., V. F. Kitayeva, N. I. Krindach, L. A. Kulevskiy, Yu. N. Polivanov, and S. N. Poluektov (0). Raman scattering of light by  $E_1$  polaritons in  $LiIO_3$  crystal. IN: Sb 1, 95-97.
207. Korolev, F. A., V. N. Migushin, and V. I. Odintsov (0). Study of stimulated Raman scattering in  $CO_2$  under excitation in a resonator. ZhPS, v. 19, no. 5, 1973, 825-830.
208. Levinson, I. B. (73). Generation and detection of nonequilibrium optical phonons during Raman scattering of laser radiation (review). FTP, no. 9, 1973, 1673-1683.
209. Sokolovskaya, A. I., Ye. A. Morozova, A. D. Kudryavtseva, and M. M. Sushchinskiy (0). Decrease in angular distribution of stimulated Raman scattering from conditions of phase synchronism in materials with low Kerr constants. IN: Sb 2, 76-80.

210. Strel'tsov, V. N. (1). Stimulated scattering of light by plasmons at high density gradients in a medium. ZhETF P, v. 18, no. 8, 1973, 532-535.
  211. Strizhevskiy, V. L., and V. M. Klimenko (0). Theory of stimulated Raman scattering from excitation of polaritons in an optical resonator. IN: Sb 1, 79-87.
  212. Strizhevskiy, V. L., and Yu. N. Yashkir (0). Stimulated Raman scattering of light by polaritons and the electrooptic effect. IN: Sb 3, 60-64.
  213. Tikhonova, Ye. A. (283). Stimulated Raman scattering method in a dynamic theory of scattering. FTT, no. 9, 1973, 2591-2597.
- b. Brillouin
214. Gorbunov, L. M. (1). Intensity of stimulated Brillouin scattering in a plasma. ZhETF, v. 65, no. 3, 1973, 990-996.
  215. Gorbunov, L. M. (1). Anisotropy of stimulated Brillouin scattering. ZhETF, v. 65, no. 4, 1973, 1337-1343.
  216. Mityakov, N. A., M. I. Rabinovich, V. O. Rapoport, and L. Ye. Shtil'man (8). Stimulated temperature scattering of electromagnetic waves in a collision plasma. ZhETF, v. 65, no. 5, 1973, 1893-1897.

#### 4. Self-focusing

217. Askar'yan, G. A. (1). The self-focusing effect. UFN, v. 111, no. 2, 1973, 249-260.

218. Betin, A. A., and G. A. Pasmanik (0). Stimulated scattering of focused light beams. IN: Sb 2, 60-68.
219. Dyshko, A. L., V. N. Lugovoy, and A. M. Prokhorov (1). Multifocus structure of light beams in a nonlinear medium. ZhETF, v. 65, no. 4, 1973, 1367-1374.
220. Kazakov, S. A., D. P. Krindach, G. A. Malyshev, and R. V. Khokhlov (0). Study of the focusing action of media with residual stresses. IN: Sb 1, 101-103.
221. Sukhorukov, A. P. (0). General properties of nonstationary self-action in media with relaxing cubic nonlinearities. IN: Sb 1, 124-126.

#### 5. Acoustic Interaction

222. Akmanov, A. G., V. G. Ben'kovskiy, P. I. Golubnichiy, S. I. Maslennikov, and V. G. Shemanin (294). Study of laser sonoluminescence in liquids. Akusticheskiy zhurnal, no. 5, 1973, 649-652.
223. Bakay, A. S., and G. G. Sergeyeva (82). Excitation of waves in magnetics by light and by a homogeneous alternating magnetic field. ZhETF, v. 65, no. 4, 1973, 1677-1690.
224. Bunkin, F. V. (1). Optical excitation of sound. Akusticheskiy zhurnal, no. 5, 1973, 798.
225. Lugovoy, V. N., and V. N. Strel'tsov (1). Sound perturbations in a medium from movement of a light focus. ZhETF, v. 65, no. 4, 1973, 1407-1415.



226. Marty ov, V. G., K. S. Aleksandrov, and A. T. Anistratov (210). Measuring the elastooptic effect in ferroelectrics by ultrasonic diffraction of light. FTT, no. 10, 1973, 2922-2926.

#### 6. General Theory

227. Brunner, W., E. Klose, and H. Paul (NS). Shortening of picosecond pulses as a result of two-photon absorption. IN: Sb 4, 124. (RZhRadiot, 2/73, no. 2Ye21)
228. Delone, N. B. (0). Elementary nonlinear optical phenomena (from material of the First International conference on the interaction of an electron with a strong electromagnetic radiation field. Balatonfjuret. Hungary, 11-16 September 1972). UFN, v. 111, no. 2, 1973, 379-383.
229. D'yakov, Yu. Ye. (1). Dyson equations for waves in optically nonlinear media. KSpF, no. 5, 1973, 39-44. (RZhF, 10/73, no. 10D798)
230. Kaiser, W. (NS). Nonlinear optics and short light pulses. Cs. cas. fys., v. A23, no. 3, 250-252. (RZhF, 10/73, no. 10D785)
231. Klyshko, D. N., and B. F. Polkovnikov (0). Phase modulation of light in three-photon processes. IN: Sb 2, 81-85.
232. Kolokolov, A. A., and G. V. Skrotskiy (0). Self-constricted pulses with spherical symmetry in a nonlinear medium. OiS, v. 35, no. 5, 1973, 898-901.
233. Lugovoy, V. N., and A. M. Prokhorov (1). Theory of propagation of high power laser radiation in a nonlinear medium. UFN, v. 111, no. 2, 1973, 203-247.

234. Pasmanik, G. A., and M. S. Sandler (0). Nonlinear optical effects in a pumping field with a diffusing phase. IN: Sb 1, 136-139.
235. Shaldin, Yu. V., and D. A. Belogurov (0). Anisotropy in nonlinear index of refraction in acentric crystals. Linear electrooptical effect. OiS, v. 35, no. 4, 1973, 693-701.
236. Sokolovskiy, R. I. (0). Nonlinear interaction of intersecting light beams in a gas. OiS, v. 35, no. 5, 1973, 972-973.
237. Strizhevskiy, V. L., and V. M. Klimenko (0). Generalized fluctation-dissipation theorem for nonequilibrium fluctuations of polarization causing three-photon scattering. IN: Sb 3, 149-152.
238. Tulub, A. V. (12). New derivation of nonlinear optics formulas. DAN SSSR, v. 212, no. 3, 1973, 584-587.
239. Zakharov, S. M., and E. A. Manykin (0). Theory of multiple photon echo. IN: Sb 4, 118. (RZhRadiot, 2/73, no. 2Yel3)

#### G. SPECTROSCOPY OF LASER MATERIALS

240. Ageyeva, N. K., V. V. Azarov, A. D. Galaktionov, A. A. Fotiyev, M. Ya. Khodos, and B. V. Shul'gin. Luminescence of neodymium in polycrystal orthovanadate rare earth elements. ZhPS, v. 19, no. 6, 1973, 1044-1047.
241. Alkeyev, N. V., A. S. Kaminskiy, and Ya. Ye. Pokrovskiy (15). Spectrum and polarization of recombination radiation in deformed silicon. ZhETF P, v. 18, no. 11, 1973, 671-675.

242. Batygov S. Kh., Yu. K. Voron'ko, L. S. Gaygerova, and V. S. Fedorov (0). Optical spectra and interaction of rare earth ions in doubly-activated fluorite crystals. OIS, v. 35, no. 5, 1973, 868-875.
243. Bobryshev, A. I., L. V. Kirilyuk, P. A. Subbota-Mel'nik, and A. A. Shishlovskiy (51). Concentration dependence between the luminescence yield and duration of afterglow in  $\text{CaF}_2\text{-Ho}^{3+}$  single crystals. UFZh, no. 12, 1973, 2055-2057.
244. Delimarskiy, Yu. K., V. D. Prisyazhnyy, S. P. Baranov, and S. A. Kirillov (0). Raman scattering spectra of thallium nitrate and its molten mixtures with sodium nitrate. IN: Sb 8, 61-62. (RZhKh, 19ABV, 21/73, no. 21B176)
245. Dite, A. F., V. I. Revenko, V. B. Timofeyev, and P. D. Altukhov (66). Bi-exciton in a CdS spectrum stimulated by radiative decay of exciton-impurity complexes. ZhETF P, v. 18, no. 9, 1973, 579-583.
246. Galanin, M. D., Sh. D. Khan-Magometova, and Z. A. Chikhikova (1). Polarization of superluminescence in anthracene crystals. KSpF, no. 7, 1973, 21-24.
247. Ionov, P. V. (13). Photosensitivity of ferroelectric niobates. FTT, no. 9, 1973, 2827-2828.
248. Kask, N. Ye., L. S. Korniyenko, G. M. Fedorov, and P. V. Chernov (2). Probability of the recombination of a hole and an extrinsic electron in a fluorite lattice. FTT, no. 9, 1973, 2789-2790.
249. Kiselev, A. M., and A. M. Kubarev (0). Time characteristics of luminescence from selenium cadmium glass. ZhPS, v. 19, no. 4, 1973, 721-723.

250. Kortenski, T., D. Vulchev, S. Ivanov, M. Miteva, and P. Petrov (NS). Absorption and luminescence spectra of [Bulgarian] Dolni-Dubnik petroleum fractions. IN: Sb 9, 219-222. (RZhKh, 19ABV, 24/73, no. 24B176)
251. Levshin, L. V., T. D. Slavnova, and V. I. Yuzhakov (2). Study of luminescence properties of rhodamine dye associates at low temperatures. VMU, no. 4, 1973, 441-445.
252. Maneva, M., and H. P. Fritz (NS). Study of crystalline hydrates. Part 5. Vibrational spectra and thermal decomposition of  $\text{LiBO}_2 \cdot n\text{H}_2\text{O}$ . Z. anorg. und allg. Chem, v. 397, no. 3, 1973, 290-296. (RZhKh, 19ABV, 21/73, no. 21B174)
253. Mishakov, V. G., P. A. Pogorelyy, and A. M. Shukhtin (0). Effect of hydrogen on the luminescence character of alkali metal and noble gas lines during a pulsed discharge. Ois, v. 35, no. 4, 1973, 784-786.
254. Personov, R. I., Ye. I. Al'shits, L. A. Bykovskaya, and B. M. Kharlamov (72). Fine structure of the luminescence spectra of organic molecules under laser excitation, and the nature of broad spectral bands of solid solutions. ZhETF, v. 65, no. 5, 1973, 1825-1836.
255. Pikulik, L. G., L. F. Gladchenko, A. D. Das'ko, and A. I. Maksimov (0). Effect of high power excitation on the fluorescence spectrum of phthalimide derivatives. ZhPS, v. 19, no. 5, 1973, 831-837.
256. Razvin, Yu. V., B. N. Tyushkevich, and A. A. Kovalev (0). Study of absorption and excited states in some phthalocyanine molecules. IN: Sb 7, 14-15. (RZhKh, 19ABV, 24/73, no. 24B225)

257. Rubinov, A. N., V. I. Tomin, and V. A. Zhivnov (0). Spectral shift of fluorescence of molecules in the light field of a nonresonant frequency laser. OIS, v. 35, no. 4, 1973, 778-779.

#### H. ULTRASHORT PULSE GENERATION

258. Lariontsev, Ye. G., and V. N. Serkin (98). Interaction of opposed ultrashort light pulses in a laser with a bleachable filter. IVUZ Radiofiz, no. 11, 1973, 1671-1675.
259. Poluektov, I. A., Yu. M. Popov, and V. S. Roytberg (1). Coherent effects in the propagation of an ultrashort light pulse in a medium with resonant two-photon absorption. ZhETF P, v. 18, no. 10, 1973, 638-641.

#### J. CRYSTAL GROWING

260. Mayyer, A. A., M. V. Provotorov, and V. A. Balashov (178). System of rare earth and alkali binary molybdates and tungstates. Uspekhi khimii, no. 10, 1973, 1788-1809.

#### K. THEORETICAL ASPECTS OF ADVANCED LASERS

261. Alferov, D. F., Yu. A. Bashmakov, and Ye. G. Bessonov (1). Theory of undulator radiation. ZhTF, no. 10, 1973, 2126-2132.
262. Kas'yanov, Yu. S., E. Ya. Kononov, V. V. Korobkin, K. N. Koshelev, and R. V. Serov (0). Intrashell transitions in the spectra of multicharged phosphorus ions. OIS, v. 35, no. 6, 1973, 1005-1012.
263. Latush, Ye. L., and M. F. Sem (0). Generation from ion transitions in alkali earth metals. IN: Sb 1, 66-71.

264. Letokhov, V. S. (0). Pumping of nuclear levels by X-rays in a laser plasma. IN: Sb 2, 125-127.

#### L. GENERAL LASER THEORY

265. Alimov, D. T., T. U. Arslanbekov, M. S. Belkin, N. B. Delone, and O. B. Monastyrskiy (1). Experimental study of the role of laser radiation statistics in the multiphoton ionization process of an atom. KSpF, no. 5, 1973, 16-18. (RZhF, 10/73, no. 10D794)
266. Bashkin, A. S., A. N. Orayevskiy, and A. Ye. Sakharov (1). Dips in the line shape of radiation from a prepolarized beam of molecules or atoms. ZhETF, v. 65, no. 3, 1973, 917-925.
267. Boytsov, V. F., Yu. Ye. Murakhver, and S. G. Slyusarev (0). Some properties of coherent optical fields. OiS, v. 35, no. 4, 1973, 708-714.
268. Chekalinskaya, Yu. I., and Ye. P. Chechenina (0). Effect of anisotropic resonator parameters on the polarization characteristics of a gas regenerative traveling wave laser amplifier. ZhPS, v. 19, no. 5, 1973, 812-820.
269. Deryugin, I. A., A. A. Vishenskiy, and V. N. Kurashov (0). Phase shifts in quantum optics. IN: Sb 3, 152-167.
270. Godenko, L. P., and V. S. Mashkevich (0). Kinetic theory of laser action in spectrally inhomogeneous media. IN: Sb 3, 29-60.
271. Idiatulin, V. S., and V. V. Uspenskiy (0). Effect of the gain profile on laser dynamics. IN: Sb 1, 51-56.

272. Klimontovich, Yu. L., A. S. Kovalev, and P. S. Landa (0). Spontaneous radiation of atoms in a strong field and its relationship to fluctuations in lasers. OiS, v. 35, no. 6, 1973, 1013-1018.
273. Kolomiyets, V. G. (0). Quantum transitions in a two-level system in an intense monochromatic pumping field. ZhPS, v. 19, no. 6, 1973, 1020-1024.
274. Letokhov, V. S. (0). Optical resonances induced by laser radiation. VAN, no. 10, 1973, 9-19.
275. Linnik, V. P., T. S. Kolomiytseva, G. N. Alyab'yeva, and N. A. Sokolova (0). Cophasing of radiation in a multichannel solid state laser system. IN: Sb 1, 131-133.
276. Mak, A. A., V. I. Ustyugov, and V. A. Fromzel' (0). Laser amplifier gain in regenerative and superregenerative regimes. OiS, v. 35, no. 5, 1973, 911-918.
277. Mashkevich, V. S. (0). Spectral theory of laser radiation. IN: Sb 3, 77-123.
278. Nefed'yev, L. A., V. V. Samartsev, and A. I. Siraziyev (214). Optical superradiance and the intrinsic electric dipole moment of resonance level. UFZh, no. 10, 1973, 1740-1742.
279. Priyutov, M. V., and S. K. Potapov (0). Formulas for the probability of two-photon electron vibrational transitions. OiS, v. 35, no. 5, 1973, 955-957.
280. Ratner, A. M., and A. M. Fisher (36). Use of phenomenological equations for a multimode laser. IVUZ Radiofiz, no. 10, 1973, 1510-1521.

281. Samartsev, V. V., and Z. M. Kaveyeva (0). Polaron superradiation. OiS, v. 35, no. 5, 1973, 968-970.
282. Vorob'yev, F. A., and R. I. Sokolovskiy (0). Statistical phenomena in multiquantum processes. OiS, v. 35, no. 4, 1973, 779-781.
283. Yelyutin, P. V. (2). Time behavior of superluminescence. ZhTF, no. 11, 1973, 2407-2412.



## II. LASER APPLICATIONS

### A. BIOLOGICAL EFFECTS

284. Lazarev, I. R., Ye. I. Polishchuk, and V. L. Isakov (225). Using lasers to treat skin tumors. Klinicheskaya khirurgiya, no. 11, 1973, 36-39.

### B. COMMUNICATIONS

#### 1. Beam Propagation in the Atmosphere

285. Bahnert, G. (NS). Deviation of light and laser beams by terrestrial refraction. Vermessungstechnik, no. 11, 1973, 406-407.
286. Bisyarin, V. P., I. P. Bisyarina, and A. V. Sokolov (0). Time distribution of attenuation coefficients of laser radiation at  $1.63\mu$  and  $10.6\mu$  during propagation in the troposphere. RiE, no. 11, 1973, 2229-2234.
287. Boldyrev, V. A., and K. P. Vasilevskiy (0). Intensity and halfwidth of  $\text{CO}_2$  lines in the  $14^{01}-00^{00}$  band. OiS, v. 35, no. 5, 1973, 818-823.
288. Donchenko, V. A., M. V. Kabanov, G. G. Matviyenko, and I. V. Samokhvalov (78). Reflection of narrow light beams by a scattering medium. IVUZ Fiz, no. 11, 1973, 61-65.
289. Donchenko, V. A., M. V. Kabanov, and I. V. Samokhvalov (0). Study of backscattering in artificial fogs and haze for the case of narrow light beams. IN: Sb 10, 174-175. (LC)

290. Gasparyan, S. S., R. A. Kazaryan, and R. G. Manucharyan (0). Experimental study of intensity fluctuations of laser radiation in the atmosphere. IN: Sb 2, 120-123.
291. Gerkhen-Gubanov, G. V. (113). Study of the effect of atmospheric dust on errors in a laser DME. IVUZ Priboro, no. 11, 1973, 111-113.
292. Gol'dshteyn, Yu. A., V. I. Yemin, and I. G. Frishman (0). The problem of noise rejection in an optical signal detector in a fading channel. RiE, no. 10, 1973, 2176-2179.
293. Golubitskiy, B. M., and M. V. Tantashev (0). Correct use of the Monte-Carlo method in solving some optical transfer problems. FAiO, no. 11, 1973, 1213-1215.
294. Gorchakov, G. I., and A. A. Isakov (64). Field unit for measuring indices [of scattering] in the glory region. FAiO, no. 11, 1973, 1201-1204.
295. Iskhakov, I. A., A. V. Sokolov, and Ye. V. Sukhonin (0). Attenuation of laser radiation at  $311\mu$  in artificial fog. RiE, no. 11, 1973, 2235-2240.
296. Ivlev, L. S., and V. I. Dmokhovskiy (0). Using a laser for the study of aerosols by the small angle method. IN: Sb 10, 31-34. (LC)
297. Kaul', B. V., and I. V. Samokhvalov (78). Use of photoelectronic multipliers for signal detection during laser probing of the atmosphere. IVUZ Fiz, no. 10, 1973, 144-146.

298. Khmelevtsov, S. S., and R. Sh. Tsvyk (78). Fluctuations of intensity and of arrival angles of light waves in spatially bounded collimated beams in a turbulent atmosphere. IVUZ Fiz, no. 9, 1973, 108-112.
299. Klyatskin, V. I. (64). Statistical theory of light propagation in a randomly inhomogeneous medium (functional methods). (Review). IVUZ Radiofiz, no. 11, 1973, 1629-1644.
300. Kon, A. I., V. L. Mironov, and V. Ye. Tselytlin (78, 64). Turbulent broadening of a focused light spot formed by a ring aperture. IVUZ Fiz, no. 11, 1973, 149-157.
301. Lukin, V. P., and V. V. Pokasov (78). Phase fluctuations of an optical wave propagating in a turbulent atmosphere. IVUZ Radiofiz, no. 11, 1973, 1726-1729.
302. Moskalenko, N. I., S. O. Mirumyants, A. V. Aver'yanova, O. V. Zotov, and Yu. A. Il'in (0). Apparatus for complex studies of the characteristics of molecular absorption of radiation by atmospheric gases. ZhPS, v. 19, no. 4, 1973, 752-756.
303. Naats, I. E. (0). Estimating the boundaries of the size spectrum and selection of wavelengths by optical probing of an atmospheric aerosol. Ois, v. 35, no. 5, 1973, 966-968.
304. Prilepin, M. T. (120). Theory of a single wave method for determining geodetic refraction. IVUZ Geod, no. 3, 1973, 7-17.
305. Rozhkovskaya, N. D. (0). Approximate model for transmitting an optical signal through an aerosol medium. IN: Sb 10, 131-134. (LC)

306. Samokhvalov, I. V. (0). Method for measuring the altitude distribution of the scattering index in a cloud by means of a pulsed source. IN: Sb 10, 194-199. (LC)
307. Toropova, T. P. (0). Scattering of light in the surface boundary layer and [the properties of] atmospheric aerosols. IN: Sb 10, 74-81. (LC)
308. Yelistratov, I. F., I. M. Levin, and T. N. Lomonosova (0). Study of the polarization of backscattered radiation as applied to the problem of visibility in turbid media. IN: Sb 10, 161-164. (LC)
309. Zege, E. P., A. P. Ivanov, I. L. Katsev, B. A. Kargin, and G. A. Mikhaylov (3). Luminous haze from a confined pulse source. FAiO, no. 10, 1973, 1054-1062.
310. Zuyev, V. Ye. (0). Laser probing of the atmosphere. VAN, no. 11, 1973, 8-21.
311. Zuyev, V. Ye., G. M. Krekov, and A. I. Popkov (78). Numerical experiments in laser probing of clouds. IVUZ Fiz, no. 10, 1973, 126-132.

## 2. Beam Propagation in Liquids

312. Avaliani, D. I., and S. S. Kutateladze (0). Interaction of light with a turbulent liquid flow. ZhPMTF, no. 4, 1973, 115-123.
313. Zubkov, L. A., N. B. Rozhdestvenskaya, and V. P. Romanov (12). Spectral analysis of anisotropic scattering of light in liquids. ZhETF, v. 65, no. 5, 1973, 1782-1796.

### 3. Theory of Propagation

- 314. Babenko, V. A., and A. P. Prishivalko (3). Scattering of light by particles with a given profile of radial inhomogeneity in refractive index. DAN BSSR, no. 12, 1973, 1093-1095.
- 315. Berger, V. K. (0). Reflection of a rectangular pulse from weak plasma inhomogeneities. IN: Sb 11, 127-141. (RZhF, 11/73, no. 11Zh177)
- 316. Berger, V. K. (0). Reflection of a rectangular pulse from a parabolic layer of an isotropic plasma near the critical frequency. IN: Sb 11, 142-152. (RZhF, 11/73, no. 11Zh178)
- 317. Bogdanovich, V. A., and V. N. Prokof'yev (0). Nonweighted laws for detecting optical signals in noise of an unknown intensity. RiE, no. 12, 1973, 2493-2500.
- 318. Bukatyy, V. I., Yu. D. Kopytin, M. M. Krekova, and G. M. Krekov (0). Illumination dynamics of a weakly absorbing turbid medium in an intense light field. OiS, v. 35, no. 4, 1973, 720-723.
- 319. Goncharenko, A. M. (3). Theory of light fluxes in lens-like media. DAN BSSR, no. 10, 1973, 902-904.
- 320. Ivanov, A. P., A. P. Prishivalko, and Ye. K. Naumenko (0). Scattering of light by a layer with a varying degree of dispersion. OiS, v. 35, no. 5, 1973, 902-906.
- 321. Ivanov, A. P., A. Ya. Khayrullina, and A. P. Chaykovskiy (0). Autocorrelation function of doubly scattered radiation. OiS, v. 35, no. 6, 1973, 1153-1160.

322. Kazovskiy, L. G. (0). Effectiveness of using feedback during transmission of information in the optical waveband. RiE, no. 11, 1973, 2318-2323.
323. Larionov, N. P., A. V. Lukin, and K. S. Mustafin (0). Nonscattered components of laser radiation propagating over a rough surface. OiS, v. 35, no. 5, 1973, 907-910.
324. Lugovoy, V. N. (1). Propagation of weak Gaussian beams through a nonlinear medium. ZhETF, v. 65, no. 3, 1973, 886-893.
325. Martynenko, O. G., A. G. Muradyan, A. A. Baranov, V. L. Kolpashchikov, and A. F. Yakubov (180). Propagation of a light beam in a continuous lens-like aberrational medium. I-FZh, v. 25, no. 4, 1973, 725-729.
326. Muradyan, A. G., O. G. Martynenko, A. A. Baranov, V. L. Kolpashchikov, and A. F. Yakubov (0). Propagation of a light beam in an aberrational lens-like medium with random disturbance in distribution of refractive index. RiE, no. 11, 1973, 2398-2401.
327. Pomerantsev, N. M. (0). Diffraction of light in thick layers. UFN, v. 111, no. 3, 1973, 507-524.
328. Zege, E. P., I. L. Katsev, and I. D. Sherbaf (3). Space-time structure of a light field from a pulsed source. FAiO, no. 9, 1973, 937-946.

#### 4. Systems

329. Abramov, K. D. (0). Generalized structural schematic for an optical range finder. IN: Sb 12, 94-101. (RZhF, 11/73, no. 11Zh50)

330. Barash, V. Ya., and Yu. F. Zastrogin (0). Optical heterodyne system with a dual-frequency radiation source for measuring mechanical vibrations. IT, no. 9, 1973, 39-41.
331. Belavkin, V. P., and R. L. Stratonovich (0). Optimization of quantum signal processing according to an information criterion. RiE, no. 9, 1973, 1839-1844.
332. Blagidze, Yu. M., M. I. Dzhibladze, A. N. Mestvirishvili, M. Ye. Perel'man, G. M. Rubinshteyn, and V. S. Chagulov (0). Attenuation of light in fiber optic lightguides. IN: Sb 2, 97-99.
333. Blyumin, M. A., and Ye. V. Pozdnyakov (250). Study of the fixed correction for the SM-3 optical DME. IVUZ Geod, no. 4, 1973, 29-36.
334. Braude, V. B. (0). Some methods for obtaining a synchronization signal in optical pulse-code modulated, time-scaled communication lines. Radiotekh, no. 10, 1973, 7-11.
335. Dubrov, M. N. (0). Experimental study of an underground mirror lightguide line. RiE, no. 12, 1973, 2480-2486.
336. Fradkov, A. B., G. N. Mikhaylova, V. A. Milyayev, and S. I. Valyanskiy (1). He<sup>3</sup> refrigerator for SHF measurements during laser excitation. KSpF, no. 7, 1973, 16-20.
337. Gvozdev, M. I., N. A. Dimov, N. L. Zhernokleyev, V. S. Zuyev, P. D. Kalachev, Yu. L. Kokurin, T. I. Marchenko, Ye. P. Orlov, and V. A. Sautkin (0). Large multi-element optical telescope with adjustable mirror configuration. UFN, v. 111, no. 3, 1973, 558-560.

338. Holub, V. (NS). Laser pulse-shaping circuit for use in optical radars. Patent Czechoslovakia, no. 142641, published 15 September 1971. (RZhRadiot, 11/73, no. 11Ye254)
339. Kolesnik, Ye. S., V. I. Lutsenko, and V. G. Sergeyev (0). Analysis of the performance of a laser DME based on a delayed feedback generator, taking into account the parameters of the system electrooptical elements. IN: Sb 12, 33-39. (RZhRadiot, 11/73, no. 11Ye259)
340. Kuchikyan, L. M., A. V. Volyar, R. S. Shevelevich, L. K. Izmaylova, and A. N. Derevyagin (0). Polarization of light in cylindrical fiber lightguides. ZhPS, v. 19, no. 5, 1973, 929-930.
341. Mirovitskiy, D. I., N. N. Yevtikhiyev, G. A. Samsonov, and I. F. Budagyan (161). Device for processing optical signals. Otkr izobr. no. 42, 1973. no. 402889.
342. Muradyan, A. G., B. N. Fedorov, V. L. Byalik, and V. I. Smirnov (135). Estimating the noise rejection of optical information systems with space compaction. IN: Tr 8, 6-11. (RZhRadiot, 10/73, no. 10Ye156)
343. Nasibov, A. S. (0). Laser [color] television. Pravda Ukrainy, 20 November 1973, p. 3.
344. [Photograph of a sun-pumped laser developed in Bulgaria]. Sovetskaya Rossiya, 5 January 1974, p. 3.
345. Prudnikov, I. N., S. A. Ginzburg, G. I. Gordon, and P. A. Mishnayevskiy (135). Effect of aberrations on beam attenuation in lightguides with periodic correction. IN: Tr 8, 21-34. (RZhRadiot, 10/73, no. 10Ye119)



346. Vinogradov, G. A. (138). Occurrence of modulated noise in systems for coherent processing of signals with the use of photofilm. IN: Sb 12, 59-62. (RZhRadiot, 12/73. no. 12Ye156)
347. Volkonskiy, V. B., Z. V. Nesterova, Yu. V. Popov, A. I. Chernyayev, and V. V. Yakovlev (7). Optical DME with shf modulation of radiation and frequency conversion in the photo-detector. OMP, no. 10, 1973, 22-25.
348. Yegorov, Yu. P., and G. Ye. Dunayevskiy (0). Doppler ranging of a rotating object with a two-frequency optical signal. RiE, no. 9, 1973, 1966-1969.
349. Zarkevich, Ye. A., and G. P. Dovlatbegov (135). Analysis of the dynamic errors in a system for automatic beam correction in light-guide communication lines. IN: Tr 8, 12-20. (RZhRadiot, 10/73. no. 10Ye156)
350. Zlenko, A. A., and V. A. Sychugov (0). Prismatic excitation device with a parabolic coupling slit profile. IN: Sb 2, 101-103.

#### C. COMPUTER TECHNOLOGY

351. Gibin, I. S., M. A. Gofman, Ye. F. Pen, and P. Ye. Tverdokhleby (0). Associative access of information in hologram memory devices. Avtometriya, no. 5, 1973, 12-18.
352. Gibin, I. S., Ye. F. Pen, and P. Ye. Tverdokhleby (0). Device for recording hologram matrices. Avtometriya, no. 5, 1973, 47-50.
353. Mayorov, S. A., and Li Si Ken (30). Method for obtaining control functions by holographic devices. IVUZ Priboro, no. 12, 1973, 50-52.

354. Mirovitskiy, D. I., and N. N. Yevtikhiyev (0). Computer devices with coherent optics. IN: Sb 5, 126-138. (RZhRadiot, 12/73, no. 12Ye196)
355. Shakhgedanov, V. N., and A. A. Shimko (0). Study of MnBi films for use in holographic memory systems. IN: Sb 2, 92-95.

#### D. HOLOGRAPHY

356. Abakumov, B. M., N. D. Baykova, I. A. Pan'shin, Ye. A. Podpalyy, T. F. Stankevich, and K. F. Shamayev (293). Recording holographic information on manganese-bismuth films. ZhNiPFiK, no. 5, 1973, 376-377.
357. Andreyev, G. A., A. A. Grachev, V. A. Zverev, and V. P. Savchenko (0). Optimal electrooptical processing of radioholograms in real time. IN: Sb 5, 174-176. (RZhRadiot, 12/73, no. 12Ye250)
358. Antonov, Ye. A., V. M. Ginzburg, E. G. Semenov, and B. M. Stepanov (141). The UIG-2 vibration-isolated holographic unit for use with a c-w laser. IN: Tr 9, 98-100. (RZhRadiot, 12/73, no. 12Ye231)
359. Antonov, Ye. A., L. N. Gnatyuk, B. M. Stepanov, Yu. I. Filenko, and V. Ya. Tsarfin (141). Holographic study of electrically exploded wires. IN: Tr 9, 77-82. (RZhFoto, 11/73, no. 11.46.205)
360. Avrorin, A. V. Ye. A. Kopylov, V. V. Kuznetsov, and V. N. Lazakov (0). Optical reconstruction of images by SHF holograms. Avtometriya, no. 5, 1973, 78-79.
361. Bernshteyn, V. M., B. Ya. Zaydler, V. I. Mandrossov, P. A. Lapshina, K. M. Snitko, and G. A. Sobolev (0). System for recording a fragment of a holographic screen. IN: Sb 5, 200-204. (RZhRadiot, 12/73, no. 12Ye268)

362. Blok, A. S., O. M. Zyuzin, E. I. Krupitskiy, and G. Kh. Fridman (0). Study of methods for forming initial indications of recognizable images by coherent optics and holography. IN: Sb 5, 78-82. (RZhRadiot, 12/73, no. 12Ye245)
363. Bondarenko, M. D., and M. S. Soskin (0). Enhancing the axial luminance of laser beams for holographic phase correction. OIS, v. 35, no. 6, 1973, 1147-1152.
364. Borshch, A. A., M. S. Brodin, V. V. Ovchar, S. G. Odulov, and M. S. Soskin (5). Dynamic holography of lattices in cadmium sulfide. ZhETF P, v. 18, no. 11, 1973, 679-682.
365. Brusin, I. Ya., P. B. Ivanov, Ye. F. Pyzh'yanov, and V. N. Slavinskaya (0). Determining the coherence of laser radiation by means of a scanned traveling wave interferometer. IN: Sb 5, 214-218. (RZhRadiot, 12/73, no. 12Ye285)
366. Budagyan, I. F., V. F. Dubrovin, N. N. Yevtikhiyev, D. I. Mirovitskiy, and V. V. Usatyuk (0). Holography of closed cavities and of "concealed" objects. IN: Sb 5, 109-113. (RZhRadiot, 12/73, no. 12Ye248)
367. Budagyan, I. F., V. F. Dubrovin, D. I. Mirovitskiy, V. A. Povetkin, and V. I. Shanin (0). Reflector-refractor integral holography. IN: Sb 5, 120-125. (RZhRadiot, 12/73, no. 12Ye260)
368. Budagyan, I. F., V. F. Dubrovin, N. N. Yevtikhiyev, and D. I. Mirovitskiy (161). Device for obtaining an integral hologram for visualization of concealed objects. Otkr izobr, no. 38, 1973, no. 362575.

369. Budagyan, I. F., V. F. Dubrovin, D. I. Mirovitskiy, and V. V. Usatyuk (161). Device for obtaining integral color holograms. Otkr izobr, no. 38, 1973, no. 398918.
370. Butusov, M. M. (0). Schematic for an underwater study of vibrations by means of holography. Avtometriya, no. 5, 1973, 62-64
371. Bykovskiy, Yu. A., V. A. Yelkhov, and A. I. Larkin (0). Coherence of semiconductor laser radiation and its use in holography. IN: Sb 5, 205-208. (RZhRadiot, 12/73, no. 12Ye251)
372. Cherkunova, G. P., V. P. Ivanov, N. M. Yelagina, V. I. Shanin, and Ye. I. Dmitriyeva (0). Holographic discrimination of objects according to the polarization patterns of scattering. IN: Sb 5, 1973, 182-189. (RZhRadiot, 12/73, no. 12Ye240)
373. Denisyuk, Yu. N. (0). Prospects and problems of holographic cinematography. ZhTF, no. 12, 1973, 2457-2462.
374. Deryugin, I. A., V. N. Kurashov, D. V. Podanchuk, and Yu. V. Khoroshkov (0). Studying the polarization characteristics of objects by holography. IN: Sb 5, 227-231. (RZhRadiot, 12/73, no. 12Ye244)
375. Deryugin, I. A., V. N. Kurashov, D. V. Podanchuk, and Yu. V. Khoroshkov (0). Polarization effects in holography. IN: Sb 3, 167-181.
376. Dobyryn, V. V., B. G. Turukhano, and N. Turukhano (0). Device for measuring two coordinates in a plane by a holographic principle. IN: Sb 5, 232-235. (RZhRadiot, 12/73, no. 12Ye238)

377. Ginzburg, V. M., and V. M. Meshchankin (141). Basic features of SHF holography. IN: Tr 9, 23-37. (RZhRadiot, 11/73, no. 11Ye206)
378. Ginzburg, V. M., V. M. Meshchankin, V. I. Mikhiyenko, Ye. S. Semiletov, B. M. Stepanov, and G. I. Chelyshev (141). The UIG-3 holographic measuring system for the SHF range. IN: Tr 9, 126-129. (RZhFoto, 11/73, no. 11.46.34)
379. Ginzburg, V. M., V. M. Kurbatov, G. N. Pavlygin, Yu. P. Presnyakov, and B. M. Stepanov (141). Holography by means of an image-converter tube. IN: Tr 7, 213-217. (RZhRadiot, 12/73, no. 12Ye227)
380. Ginzburg, V. M., G. M. Ginzburg, V. A. Lisovskiy, and A. V. Morozov (0). Some results of using holographic correlators for analyzing electrocardiograms. IN: Sb 5, 263-266. (RZhRadiot, 12/73, no. 12Ye241)
381. Gurari, M. L., V. A. Nikashin, G. I. Rukman, and V. K. Sakharov (141). Method for obtaining a motion picture hologram by a dynamic process. IN: Tr 9, 13-15. (RZhFoto, 10/73, no. 10.46.218)
382. Gurevich, S. B., G. A. Gavrilov, A. A. Kolesnikov, V. K. Sokolov, and D. F. Chernykh (0). Effect of nonlinearity in a communication channel on an image reconstructed from a hologram transmitted on the same channel. IN: Sb 5, 31-36. (RZhRadiot, 12/73, no. 12Ye255)
383. Gurevich, S. B., G. A. Gavrilov, N. N. Il'yashenko, A. A. Kolesnikov, V. K. Sokolov, and D. F. Chernykh (0). Effect of communication channel noise on the image reconstructed from a hologram transmitted on the same channel. IN: Sb 5, 37-41. (RZhRadiot, 12/73, no. 12Ye233)

384. Gurevich, S. B., V. V. Odnol'ko, and D. F. Chernykh (0). Characteristics of a three-dimensional image and the requirements for holographic systems to transmit that image. IN: Sb 5, 42-45. (RZhRadiot, 12/73, no. 12Ye267)
385. Gurevich, S. B., A. A. Kolesnikov, and N. V. Lapteva (0). Some possibilities of correlation analysis as applied to the processing of fine-structure images in coherent and noncoherent light. IN: Sb 5, 92-95. (RZhRadiot, 12/73, no. 12Ye155)
386. Ivanov, A. A., G. S. Mizezhnikov, and V. B. Shteynshleyger (0). Obtaining radio images in the millimeter band by a holographic system. RiE, no. 9, 1973, 1995-1997.
387. Kabo, I. Ya. (0). Estimating quantization level errors in digital synthesis of amplitude holograms. IN: Sb 5, 25-27. (RZhRadiot, 12/73, no. 12Ye259)
388. Kakichashvili, Sh. D., and M. I. Chirakadze (0). Holographic conversion of multidigit numbers. IN: Sb 5, 28-30. (RZhRadiot, 12/73, no. 12Ye236)
389. Kakichashvili, Sh. D., D. V. Leselidze, and T. I. Stavrianidi (0). Phase distortions of a reconstructed image. IN: Sb 5, 74-76. (RZhRadiot, 12/73, no. 12Ye256)
390. Kakichashvili, Sh. D. (0). Polarized recording of holograms. IN: Sb 5, 222-226. (RZhRadiot, 12/73, no. 12Ye266)
391. Kakichashvili, Sh. D. (39). Holographic visualization of an acoustic field without a reference wave. UFZh, no. 9, 1973, 1410-1416.

392. Kalestynski, A., and B. Smolinska (NS). Relief-reflection holograms. APP, v. A44, no. 5, 1973, 701-710.
393. Kolokolov, A. I. (19). Synthesis of holograms with given scale distortions. IN: Tr 10, 126-135. (RZhRadiot, 11/73, no. 11Ye205)
394. Krupitskiy, E. I., A. A. Rizkin, and S. V. Morozov (0). Holographic method for obtaining an initial description in the recognition of three-dimensional objects. IN: Sb 5, 83-87. (RZhRadiot, 12/73, no. 12Ye242)
395. Krupitskiy, E. I., and G. Kh. Fridman (90). Holographic device for separating random images from a known interference. Otkr izobr, no. 41, 1973, no. 380186.
396. Kryuchkov, V. A. (0). Problem of localizing interference bands in holographic interferometry. IN: Sb 14, 122-127. (RZhMetrolog, 9/73, no. 9.32.1226)
397. Kulakov, S. V., B. P. Razzhivin, D. V. Tigin, and G. K. Ul'yanov (0). Applying linear circuit theory to the analysis of a simple optical filter for compression of linear-frequency-modulated radio pulses. IN: Sb 5, 46-50. (RZhRadiot, 12/73, no. 12Ye257)
398. Kulakov, S. V., B. P. Razzhivin, D. V. Tigin, and G. K. Ul'yanov (0). Dispersion analyzer of a pulsed signal spectrum based on an opto-acoustic compression filter of beam-frequency-modulated r-f pulses. IN: Sb 5, 51-55. (RZhRadiot, 12/73, no. 12Ye157)
399. Kulakov, S. V., B. P. Razzhivin, and D. V. Tigin (0). Some problems in the theory of an opto-acoustic radio signal correlator. IN: Sb 5, 56-60. (RZhRadiot, 12/73, no. 12Ye158)

400. Larionov, N. P., A. V. Lukin, and K. S. Mustafin (0). Holographic control of objects with rough surfaces. IN: Sb 5, 254-257. (RZhRadiot, 12/73, no. 12Ye265)
401. Levin, G. G. (0). Effect of random deformations of a hologram shape on the quality of the reconstructed image. IN: Sb 5, 21-24. (RZhRadiot, 12/73, no. 12Ye258)
402. Lisovskiy, V. A., and V. P. Sivolapov (141). The IS-1 signal repeater with Doppler frequency shift. IN: Tr 9, 134-136. (RZhFoto, 11/73, no. 11.46.35)
403. Mirovitskiy, D. I., I. F. Budagyan, and V. F. Dubrovin (0). Principles of integral holography and prospects for its development. IN: Sb 5, 101-108. (RZhRadiot, 12/73, no. 12Ye247)
404. Mirovitskiy, D. I., I. F. Budagyan, and V. F. Dubrovin (0). Features of constructing integral-holographic stands. IN: Sb 5, 114-119. (RZhRadiot, 12/73, no. 12Ye246)
405. Mirovitskiy, D. I. (0). Three-dimensional integral conversion in Fourier holography. IN: Sb 5, 242-248. (RZhRadiot, 12/73, no. 12Ye243)
406. Seminar on the preparation, processing and properties of photo-materials for holography [12-13 June 1973]. TKiT, no. 10, 1973, 91-92.
407. Shtyrkov, Ye. I. (0). Holographic relaxometer. IN: Sb 5, 258-262. (RZhRadiot, 12/73, no. 12Ye237)



408. Shumkova, N. (0). Jobs for holography. VDNKh SSSR, no. 12, 1973, 28-29.
409. Smirnov, A. G., V. G. Smirnov, A. M. Timonin, and V. F. Shanskiy (0). Holographic interferometry of a moving electric arc. IN: Sb 15, 74-79. (RZhF, 11/73, no. 11G276)
410. Sokolov, V. K., D. F. Chernykh, and V. V. Yanovskiy (0). Methods for preparing amplitude filters with a given gating law. IN: Sb 5, 88-91. (RZhRadiot, 12/73, no. 12Ye159)
411. Solodkin, Yu. N. (0). The holographic interferometer as a measuring instrument. Avtometriya, no. 5, 1973, 64-68.
412. Soskin, M. S., M. D. Bondarenko, S. G. Odulov, P. P. Pogoretskiy, and Ye. N. Sal'kova (0). Conversion of laser beams by holography. IN: Sb 5, 209-213. (RZhRadiot, 12/73, no. 12Ye234)
413. Titov, A. N., D. I. Mirovitskiy, A. P. Pichugin, Ye. I. Dmitriyeva, and V. I. Shanin (0). Realization of orientation-scale invariance in the problem of holographic pattern recognition. IN: Sb 5, 190-195. (RZhRadiot, 12/73, no. 12Ye252)
414. Tsukanov, V. I., V. G. Krasnikovskiy, R. O. Barsegyants, and Yu. B. Markevich (0). Infrared holography systems based on electronic IR field visualizers. IN: Sb 5, 281-283. (RZhRadiot, 12/73, no. 12Ye239)
415. Ushakov, M. A., and A. I. Kolokolov (19). Relationship of scale distortions in holograms to the parameters of the reconstructed image. IN: Tr 10, 113-125. (RZhRadiot, 11/73, no. 11Ye208)

416. Vagin, L. N., V. A. Vanin, and A. N. Drozhzhin (7). Holographic stand. OMP, no. 11, 1973, 64.
417. Vasil'yev, A. M., S. T. De, A. V. Loginov, and Yu. N. Solodkin (0). Study of the vibrational characteristics of objects by holographic interferometry. Avtometriya, no. 5, 1973, 59-62.
418. Vlad, V. I., Z. Maris, J. Maurer, and D. Popa (NS). Basic principles of holography. Stud. si serc. fiz., v. 25, no. 3, 1973, 359-380. (RZhF, 11/73, no. 11D1480)
419. Vlasov, N. G., and Yu. P. Presnyakov (0). A simplified variant of shift interferometry. PTE, no. 5, 1973, 199-201.
420. Voronin, E. S., Yu. A. Il'inskiy, V. S. Solomatin, and V. V. Shuvalov (0). Effect of grain on the resolving power of infrared images. IN: Sb 2, 115-118.
421. Yegiazaryan, L. Sh., S. Kh. Oganessian, B. Ye. Khaykin, and V. S. Khitrova (0). Possibility of eliminating diffraction orders in synthesized binary holograms. OiS, v. 35, no. 4, 1973, 768-770.
422. Yenin, V. I., and V. G. Khromykh (0). Transfer function and space-frequency characteristics of a spatial signal amplifier. IN: Sb 5, 61-65. (RZhRadiot, 12/73, no. 12Ye5)
423. Yermolayev, M. M., and Ye. I. Mikhaylova (7). Apparatus for studying photographic materials used in holography. OMP, no. 10, 1973, 27-29.

424. Yevtikhiyev, N. N., A. I. Polev, A. I. Fefer, and A. A. Pastushkov (0). Holographic device for controlling defects in transparent objects. IN: Sb 5, 267-271. (RZhRadiot, 12/73, no. 12Ye262)
425. Yevtikhiyev, N. N., B. M. Milinkis, and K. P. Tsvetayev (0). Control of laser radiation in holographic systems. IN: Sb 5, 276-280. (RZhRadiot, 12/73, no. 12Ye264)
426. Zakin, V. G., I. A. Piontkovskaya, and A. V. Shisharin (0). Reconstruction of one-dimensional and two-dimensional holograms by noncoherent light. IN: Sb 5, 96-100. (RZhRadiot, 12/73, no. 12Ye249)
427. Zel'dovich, B. Ya., and T. I. Kuznetsova (0). Forming a reference wave for nonstationary holography. IN: Sb 1, 93-95.
428. Zubov, V. A., A. V. Krayskiy, and T. I. Kuznetsova (0). Holographic method of recording the time characteristics of optical signals. IN: Sb 5, 70-73. (RZhRadiot, 12/73, no. 12Ye263)
429. Zuykova, E. M., L. A. Pasmanik, and V. I. Turchin (36). Optical processing in noncoherent light of data from radioholographic measurements of antenna directional patterns. IVUZ Radiofiz, no. 10, 1973, 1615-1618.
430. Zvezdin, A. K., and A. F. Popkov (0). Characteristics of holograms recorded in gyrotropic birefringent media. Mikroelektronika, v. 2, no. 4, 1973, 301-304. (RZhF, 11/73, no. 11D1506)

E. LASER-INDUCED CHEMICAL REACTIONS

431. Alimpiyev, S. S., and N. V. Karlov (1). Experimental methods for observing and studying the effects of coherent interaction between pulsed infrared radiation and molecular gases. IAN Fiz, no. 10, 1973, 2022-2031.
432. Basov, N. G., A. N. Orayevskiy, A. A. Stepanov, and V. A. Shcheglov (1). Nonequilibrium vibrational kinetics of molecules in the presence of a resonant laser field. ZhETF, v. 65, no. 5, 1973, 1837-1856.
433. Gordiyets, B. F., A. I. Osipov, and V. Ya. Panchenko (2). Kinetics of nonequilibrium dissociation of molecules during cascade excitation of vibrations by laser radiation. ZhETF, v. 65, no. 3, 1973, 894-906.
434. Gritsan, V. I., L. N. Krasnoperov, and V. N. Panfilov (295). Effect of CO<sub>2</sub> laser radiation on the decomposition kinetics of gaseous chlorine dioxide. DAN SSSR, v. 212, no. 6, 1973, 1368-1371.
435. Petrov, A. K., A. N. Mikheyev, V. N. Sidel'nikov, and Yu. N. Molin (295). Study of the bromination reaction of pentafluorobenzene in the gas phase under the action of a CO<sub>2</sub> laser. DAN SSSR, v. 212, no. 4, 1973, 915-917.
436. Weigmann, H.-J., A. Lau, K. Lenz, W. Werncke, and M. Pfeiffer (NS). Chemical reactions from the action of laser radiation. Z. Chem., v. 13, no. 4, 1973, 125-129.

## F. INSTRUMENTATION AND MEASUREMENTS

### 1. Measurement of Laser Parameters

437. Aleshin, B. I., Yu. A. Drozhbin, V. S. Orlov, and A. A. Simon (0). Nonselective calorimeter for measuring the energy distribution of radiation from pulsed lasers. IN: Sb 6, 183-184. (RZhMetrolog, 9/73, no. 9.32.1202)
438. Apollonov, V. V., A. I. Barchukov, and V. K. Konyukhov (0). Measuring laser mirror scattering from reflection of a CO<sub>2</sub> laser fundamental mode. IN: Sb 2, 103-105.
439. Astrakhantseva, I. G., V. S. Borodin, and V. D. Gebekov (0). Improving the sensitivity of an absorption method by crossing a Fabry-Perot etalon with a monochromator. IN: Sb 15, 79-88. (RZhF, 11/73, no. 11G274)
440. Baryshev, L. A., and V. K. Nikolayev (0). Laser radiation power meter. Otkr izobr, no. 25, 1973, no. 385181.
441. Belokrinitskiy, N. S., A. V. Gnatovskiy, M. V. Danilevko, and M. T. Shpak (5). Study of spatial coherence of gas laser radiation. UFZh, no. 11, 1973, 1809-1813.
442. Borovskiy, V. N., M. G. Krimnus, O. I. Krutskikh, V. D. Ovsyannikov, and I. Ya. Khaskin (0). Device for determining the directional pattern of laser radiation. Otkr izobr, no. 23, 1973, no. 383139.
443. Bylinkin, V. V., N. V. Zhimskaya, P. M. Valov, and B. S. Ryvkin (0). Method for measuring the radiation power of lasers. Otkr izobr, no. 44, 1973, no. 405153.

444. Dem'yantseva, S. D., and V. A. Tabarin (0). Meter for measuring the energy of laser pulses using a ferrite single crystal. IN: Sb 15, 185-186. (RZhMetrolog, 9/73, no. 9.32.1201)
445. Drozhbin, Yu. A. (0). Photometric characteristics of a recording system with electrooptic converters for short light pulses. IT, no. 9, 1973, 33-34.
446. Galutin, V. Z., S. S. Zenkevich, I. V. Obukhov, and A. P. Skibarko (0). Frequency stabilization in a gas laser operating in a two-mode regime. IVUZ Radioelektr, no. 9, 1973, 90-93.
447. Gorbenko, B. Z., Yu. A. Drozhbin, V. A. Kozlov, G. V. Kolesov, V. A. Nefed'yev, L. A. Platonova, and A. I. Churbakov (0). Meter for measuring spatial distribution of radiation in the near infrared. IN: Sb 15, 180. (RZhMetrolog, 9/73, no. 9.32.1204)
448. Kapralov, V. P. (0). Measuring the beat frequency of a gas laser. Metrologiya, no. 12, 1973, 31-33.
449. Korobkin, V. V., A. A. Malyutin, and M. Ya. Shchelev (141). Use of an image-converter tube to study picosecond processes. IN: Tr 7, 159-165. (RZhRadiot, 12/73, no. 12Ye89)
450. Kuz'michev, V. M., and Yu. M. Latynin (34). Meter for measuring the divergence of laser radiation. Otkr izobr, no. 45, 1973, no. 406255.
451. Nesterenko, V. M., I. G. Kytina, and Z. L. Yefreyev (0). Fast-response heat detector for measuring the power characteristics of laser radiation. Metrologiya, no. 12, 1973, 26-33.

452. Nowicki, R. (NS). Calorimeter for measuring the radiation power of lasers in the medium power range. Pr. nauk. Inst. telekomun. i akust. PWr., no. 14, 1973, 123-129. (RZhF, 10/73, no. 10D915)
453. Osipov, A. S., G. A. Ponomarev, Yu. P. Mayboroda, V. K. Batalin, V. G. Kurganov, and V. P. Vasilets (0). Spectrum analyzer for laser radiation at 10.6  $\mu$ . PTE, no. 5, 1973, 261.
454. Pelepelina, G. A., and B. T. Fedyushin (0). Light pressure meter. Otkr izobr, no. 24, 1973, no. 384025.
455. Plotnikov, V. A., and L. N. Chastukhina (0). Meter for measuring the variable component of laser output flux. IT, no. 9, 1973, 87.
456. Tabarin, V. A. (78). Ponderomotive meter for measuring power of optical radiation. Otkr izobr, no. 36, 1973, no. 396564.
457. Zharkova, G. M., A. M. Orishich, A. G. Ponomarenko, and R. I. Soloukhin (193). Infrared optical converter. PTE, no. 5, 1973, 208-210.

## 2. Miscellaneous Measurement Applications

458. Aleksandrov V. I., V. F. Kitayeva, I. V. Kozlov, V. V. Osiko, N. N. Sobolev, V. M. Tatarintsev, and I. L. Chistyy (1). Molecular scattering of light in a hafnium dioxide single crystal. Kristal, no. 5, 1973, 108-1087.
459. Artamonov, O. M., and Yu. I. Asalkhanov (0). Induced polarization of adsorbed molecules in an intense optical field. OiS, v. 35, no. 5, 1973, 894-897.

460. Bakeyev, A. A., T. P. Narozhnaya, and R. Ye. Rovinskiy (0). Effect of a quartz shell on the results of interferometric studies of a pulsed discharge. TVT, no. 5, 1973, 1111-1113.
461. Baltramiejunas, R., V. Grivickas, J. Storasta, and J. Vaitkus (49). Influence of mobility on photoconductivity in CdSe single crystals at high excitation density. PSS(a), v. 19, no. 2, 1973, K115-K119.
462. Barill, G. A., Yu. G. Vasilenko, Yu. N. Dubnishchev, V. P. Koronkevich, V. S. Sobolev, A. A. Stolpovskiy, and Ye. N. Utkin (0). Laser Doppler velocimeter for fluids and gases. IN: Imeko 6. Dresden, 1973. Sec. 4. On-line Measurements of Continuous Processes. Preprint. [East] Berlin, 1973, 81-91. (RZhRadiot, 12/73, no. 12Ye215)
463. Belogol'skiy, V. A., Yu. N. Vlasov, D. L. Zelikson, and A. M. Trokhan (0). Use of salt markers in measuring fluid dynamics by optical means. ZhPMTF, no. 5, 1973, 70-74.
464. Belokon', M. V., and A. N. Rubinov (0). Recording of  $I_2$  and  $Br_2$  vapor absorption spectra by means of a dye laser. ZhPS, v. 19, no. 6, 1973, 1017-1019.
465. Beterov, I. M., V. P. Chebotayev, and A. S. Provorov (0). High precision spectroscopy of  $SF_6$  with a c-w high pressure tunable  $CO_2$  laser. Opt. Communs, v. 7, no. 4, 1973, 410-411. (RZhF, 11/73, no. 11D1304)
466. Bol'shov, M. A., I. D. Guzeyev, A. V. Zybin, V. G. Koloshnikov, I. A. Mayorov, V. V. Nedler, S. L. Mandel'shtam, Ye. F. Timofeyev, and L. N. Filimonov (0). Detecting small concentrations of Na by resonance fluorescence using a tunable pulsed dye laser. ZhPS, v. 19, no. 5, 1973, 821-824.



467. Galaktionova, N. M., A. A. Mak, O. A. Orlov, and A. P. Khyuppenen (7). Possibility of producing an ultrasensitive meter for measuring artificial anisotropy and Faraday rotation of plane polarization. ZhETF P, v. 18, no. 8, 1973, 507-510.
468. Gorokhov, Yu. A., O. N. Kompanets, V. S. Letokhov, G. A. Gerasimov, and Yu. I. Posudin (0). Narrow saturation resonances in the spectrum of  $\text{OsO}_4$  excited by  $\text{CO}_2$  laser radiation. Opt. Commun., v. 7, no. 4, 1973, 320-322. (RZhF, 11/73, no. 11D1302)
469. Corskiy, S. M., and V. P. Lebedev (0). Correlation method for attenuation of the random multiplicative noise effect in Fourier spectroscopy. Ois, v. 35, no. 5, 1973, 941-945.
470. Grokhol'skiy, A. L., V. M. Zemlyanskiy, V. G. Arendt, and Ya. L. Mindyuk (0). Measuring a velocity vector by means of a laser Doppler meter. IN: Sb 16, 35. (RZhRadiot, 12/73, no. 12Ye225)
471. Kadymov, A. Kh. (0). Fabry-Perot laser interferometer for measuring plasma density in a nonstationary flow. PTE, no. 5, 1973, 196-199.
472. Kafarov, V. V., V. P. Vorob'yev, V. A. Klipinitser, and I. M. Zhernovaya (0). Using a laser to determine the phase interface surface of a two-phase system in an apparatus with a stirrer. IN: Sb 17, 197-202. (RZhMekh, 10/73, no. 10B765)
473. Kalinkevich, A. A., and L. S. Ushakov (15). Spectroscopic study of the  $J = 21 \rightarrow 22$  rotational transition in  $\text{CO}$ . IVUZ Radiofiz, no. 11, 1973, 1676-1679.
474. Khalfin, L. A., T. A. Pavlichuk, and M. Ya. Shul'man (0). Experiment on the improvement of image quality. Ois, v. 35, no. 4, 1973, 766-768.

475. Kolerov, A. N., and G. D. Petrov (140). Determining the electron concentration in a plasma by a three-mirror submillimeter laser interferometer. TVT, no. 5, 1973, 1107-1108.
476. Kolosov, Yu. A., and A. P. Kurochkin (0). Device for optical modeling of directional patterns of multiplicative antennas. Otkr izobr, no. 36, 1973, no. 396640.
477. Koronkevich, V. P., G. G. Tarasov, I. A. Mikhail'tsova, and G. A. Lenkova (0). Interferometer for a laser gravimeter. IN: Sb 18, 27-36. (RZhGeod, 11/73, no. 11.52.63)
478. Koronkevich, V. P., V. P. Kir'yanov, I. F. Klistorin, G. A. Lenkova, A. I. Lokhmatov, and A. M. Shcherbachenko (75). Laser displacement meter. Otkr izobr, no. 43, 1973, no. 328798.
479. Kostko, O. K. (0). The laser in meteorology. Kazakhstanskaya pravda, 20 November 1973, p. 4.
480. Krivchikova, E. P., and K. I. Taganov (0). Some applications and features of analyzing a substance according to emission and absorption spectra, using a laser light source. ZhPS, v. 19, no. 4, 1973, 601-604.
481. Letokhov, V. S., A. A. Makarov, and Ye. A. Ryabov (72). Determining the population of vibrational-rotational levels of molecules using a method of absorption saturation by laser radiation. DAN SSSR, v. 212, no. 1, 1973, 75-78.
482. Nowicki, R. (NS). Measuring the time constant of CdS photoresistors irradiated by a laser beam. Pr. nauk. Inst. telekomun. i akust. PWr, no. 14, 1973, 143-147. (RZhF, 10/73, no. 10A227)

483. Pachuta, S., and R. Koscielowski (NS). APLO-KP3 automatic laser optical plummet. Przegląd geodezyjny, no. 10, 1973, 422-424.
484. Petru, F., B. Popela, J. Krsek, and A. Stejskal (NS). Universal laser interferometer. Jemna mechanika a optika, no. 10, 1973, 261-269.
485. Ponomarev, A. I., and M. V. Nikitina (0). Experiment in using the MA-1 laser microanalyzer to study metallic materials. IN: Sb 19, 218-222. (RZhMetal, 10/73, no. 101637)
486. Protsenko, Ye. D., and G. I. Kozin (16). Method for measuring low optical densities of a medium. Otkr izobr, no. 42, 1973, no. 402976.
487. Rebane, L. A., T. Yu. Khal'dre, A. Ye. Novik, and A. A. Gorokhovskiy (67). Raman scattering of light by  $\text{NO}_2^-$  and  $\text{NO}_3^-$  molecular ions in alkali halide crystals. FTT, no. 11, 1973, 3188-3195.
488. Rinkevichyus, B. S. (19). Laser Doppler method for measuring local velocities. UFN, v. 111, no. 2, 1973, 305-330.
489. Senatskiy, Yu. V. (0). Laser systems and instruments at the "Optics-72" exhibit [Moscow, November-December 1972]. IN: Sb 2, 130-131.
490. Shakhparonov, M. I., V. I. Vysotskaya, L. V. Ianshina, F. I. Panachev, and I. I. Yazev (2). Measuring the depolarization degree of vapor-scattered light and determination of the electrooptical parameters of the molecules. VMU, Khimiya, no. 5, 1973, 528-531.
491. Shustin, O. A., T. S. Velichkina, L. F. Mikheyeva, and I. A. Yakovlev (2). Scattering of light in a  $\text{KH}_2\text{PO}_4$  crystal during its high temperature phase conversion. ZhETF P, v. 18, no. 10, 1973, 632-634.

492. Sokolov, R. N., G. D. Petrov, V. N. Funtakov, and F. A. Kudryavitskiy (0). Measuring the particle size spectrum in a flame. IT, no. 10, 1973, 60-61.
493. Soltyk, V. Ya., G. Ya. Kabkov, and A. M. Surikov (0). Prospects for using laser converters in machine tools with numerical program control. IN: Sb 20, 114-118. (RZhRadiot, 12/73, no. 12Ye321)
494. Stolyarov, A. K., A. A. Komlev, and A. P. Aksenichikov (0). Some features of the behavior of a photochromic organic layer at high powers of irradiation. IN: Sb 1, 91-92.
495. Tatarinov, V. V. (0). Experimental study of the parameters of a laser interferometer. IN: Sb 21, 230-232. (RZhMetrolog, 9/73, no. 9.32.1230)
496. Vasil'tsov, Ye. A., and V. M. Shikhorin (0). Laser velocimeter studies of local flow velocities in a container with a stirrer. IN: Sb 17, 53-58. (RZhMekh, 10/73, no. 10D743)
497. Yeroshenko, V. M., A. L. Yermakov, A. A. Klimov, and Yu. N. Terent'yev (0). Interferometric and thermoanemometric methods for studying binary boundary layers. IN: Sb 22, 70-84.
498. Yevdokimov, S. V., Ye. V. Nilov, and A. A. Chertkov (0). Use of lasers for high speed motion picture photography of fast-flow processes. PTE, no. 5, 1973, 193-195.
499. Zelikson, D. L. (0). Use of a multibeam interferometer in a laser shadow instrument with photoelectric recording. IT, no. 10, 1973, 19-21.

## G. BEAM-TARGET INTERACTION

### 1. Metal Targets

500. Bondarenko, G. G., L. I. Ivanov, and V. A. Yanushkevich (22). Nature of structural damage in aluminum under the action of giant laser pulses. FMM, v. 36, no. 4, 1973, 879-880.
501. Burenkov, G. L., V. B. Deymontovich, L. O. Zhenni-Mayskaya, M. Z. Kol'chinskiy, A. V. Perepelkin, and A. I. Raychenko (0). Structural and concentration changes in alloys subjected to laser radiation. IN: Sb 23, 75-81. (RZhMetal, 9/73, no. 91244)
502. Bystrova, T. V., V. B. Librovich, and V. I. Lisitsyn (0). Elements of combustion theory in gas laser cutting of metals. FGiV, no. 5, 1973, 725-732.
503. Chel'nyy, A. A. (0). Laser welding method. Otkr izobr, no. 41, 1973, no. 249513.
504. Chel'nyy, A. A., A. I. Timofeyev, and A. F. Lavrov (0). Device for processing materials by laser beam. Otkr izobr, no. 41, 1973, no. 260782.
505. Devyatykh, G. G., N. V. Larin, G. A. Maksimov, and A. I. Suchkov (297). Ionizability of chemical elements under the action of laser radiation. ZhFKh, no. 11, 1973, 2917-2919.
506. Garashchuk, V. P., N. L. Kureta, I. V. Molchan, and V. E. Moravskiy (0). Zone structure of laser beam hardening action in a silicon iron single crystal. FiKhOM, no. 5, 1973, 113-116.

507. Karasev, I. G., and V. M. Kirillov (0). Possibility of improving the effectiveness of the laser in metal processing. FikHOM, no. 5, 1973, 3-9.
508. Levinson, G. R., and V. I. Smilga (0). Mechanism of destruction of thin metal films by focused laser radiation. IN: Sb 1, 72-78.
509. Litvinova, L. I. (0). Study of factors affecting the interaction of ruby laser radiation with tantalum film. IN: Sb 7, 93-94. (RZhRadiot. 11/73, no. 11Yel66)
510. Lysikov, Yu. I. (0). Vaporization in a vacuum of thin metal films heated by laser radiation. FikHOM, no. 6, 1973, 67-71.
511. Samsonov, G. V., A. D. Verkhoturov, V. S. Kovalenko, A. I. Roshchina, V. P. Kotlyarov, and N. I. Prikhod'ko (0). Estimating the erosion of metals and carbides under processing by laser radiation. EOM, no. 6, 1973, 5-8.
512. Volod'kina, V. L., K. I. Krylov, and M. N. Libenson (0). Heating of metals by CO<sub>2</sub> laser radiation in an oxidizing atmosphere. FikHOM, no. 5, 1973, 145-146.

## 2. Dielectric Targets

513. Aleshin, I. V., A. M. Bonch-Bruyevich, V. I. Zinchenko, Ya. A. Imas, and V. L. Komolov (0). Effect of distribution of absorption inhomogeneities in the irradiated spot on the development of breakdown in transparent dielectrics. ZhTF, no. 12, 1973, 2625-2629.

514. Ashmarin, I. I., Yu. A. Bykovskiy, A. I. Larkin, and E. A. Manykin (16). Dynamic characteristics of laser destruction in glass. ZhTF, no. 11, 1973, 2397-2401.
515. Kask, N. Ye., L. S. Korniyenko, G. M. Fedorov, and D. B. Chopornyak (7). Dependence of destruction threshold of laser glass on the size of nonmetallic inclusions. OMP, no. 10, 1973, 61-62.
516. Kask, N. Ye., L. S. Korniyenko, and G. M. Fedorov (0). Destruction of optical glass by laser radiation. ZhTF, no. 11, 1973, 2388-2396.
517. Lisitsa, M. P., and I. V. Fekeshgazi (0). Energy and time characteristics of a laser pulse passing through a damaged region of glass. IN: Sb 3, 64-70.
518. Lisitsa, M. P., and I. V. Fekeshgazi (0). Effect of ambient atmospheric pressure on the process of surface damage to transparent glass by laser radiation. IN: Sb 3, 71-76.
519. Machulka, G. A., V. M. Gur'yanov, and L. P. Muratova (0). Apparatus for cutting glass elements [by laser]. Otkr izobr, no. 37, 1973, no. 397483.
520. Novikov, N. P. (17). Self-oscillation character of the growth of laser cracks. MP, no. 5, 1973, 923-925.
521. Volkova, N. V., G. P. Gusev, P. N. Tsirul'nik, and A. V. Shatilov (7). Effect of the source material on the radiation resistance of optical fluorite. OMP, no. 10, 1973, 31-33.
522. Vuntsevich, I. L., O. Ye. Marin, N. F. Pilipetskiy, and V. A. Unadyshev (17). Profile of a laser crack in polymethylmethacrylate. MP, no. 5, 1973, 921-923.

523. Zel'manov, I. L., V. N. Kologrivov, V. I. Kulikov, and V. V. Pedanov (0). Interference methods for studying explosive movements in solids. IN: Sb 6, 166-167. (RZhMekh, 9/73, no. 9B235)

### 3. Semiconductor Targets

524. Abdullayev, G. B., G. A. Akhundov, A. A. Agayeva, V. M. Salmanov, Yu. P. Sharonov, and I. D. Yaroshetskiy (86). Determining the cross-section of light absorption by nonequilibrium carriers produced by a ruby laser in indium selenide crystals. FTP, no. 11, 1973, 2225-2227.
525. Mezokh, Z. I., L. I. Ivanov, V. A. Yanushkevich, and L. D. Dobychnina (0). Behavior of n-type germanium under the action of giant laser pulses at 77° K. FikHOM, no. 5, 1973, 10-14.

### 4. Liquid Targets

526. Askar'yan, G. A., Ye. K. Karlova, R. P. Petrov, and V. B. Studenov (1). Action of a high power laser beam on the surface of water with a liquid film: selective evaporation, burning out, and ejection of the cover layer. ZhETF P, v. 18, no. 11, 1973, 665-667.
527. Bozhkov, A. I. (1). Instability of a layer of a transparent liquid in an intense optical radiation field. IVUZ Radiofiz, no. 8, 1973, 1183-1194.
528. Romanov, G. S., and V. K. Pustovalov (3). Heating and vaporization of a spherical particle under the action of monochromatic radiation. ZhTF, no. 10, 1973, 2163-2168.



## 5. Miscellaneous Studies

529. Abramov, V. S., and U. Kh. Kopvillem (0). Superradiative state and echo from coherent quasiparticles in zone-zone transition semiconductors. OIS, v. 35, no. 6, 1973, 1142-1146.
530. Assovskiy, I. G. (0). Equation for nonstationary combustion of powder under optical irradiation. FGiV, no. 6, 1973, 874-883.
531. Bakosh, I. (Bakos, J.), A. Kish (A. Kiss), L. Sabo (L. Szabo), and M. Tendler (NS). Measuring the excitation of atomic levels under the action of intense light, using a resonance multiphoton ionization process. ZhETF P, v. 18, no. 7, 1973, 403-407.
532. Cucurezeanu, I., P. Suci, P. Sterian, and V. Ghiordanescu (NS). Interaction between laser radiation and an AgCl photochromic material. Stud. si cer. fiz., v. 25, no. 6, 1973, 649-653. (RZhRadiot, 12/73, no. 12Ye320)
533. Ivlev, Ye. I. (140). Action of pulsed laser radiation on an absorption detector. TVT, no. 5, 1973, 1025-1030.
534. Medvedev, Yu. A., and V. D. Khokhlov (0). Criteria for excitation of a shock wave and its intensity during an explosion in a discharge gas. ZhPMTF, no. 5, 1973, 48-51.
535. Plis, A. I., Ye. L. Tyurin, and V. A. Shcheglov (19). Laser-initiated thermal wave in a substance. ZhTF, no. 11, 1973, 2267-2272.
536. Vladkova, T. G., I. N. Kolev, P. Ts. Tsvetkov, and I. T. Mladenov (NS). Possibility of studying the intermolecular structure of polystyrol by laser etching. DBAN, no. 9, 1973, 1189-1191.

## H. PLASMA GENERATION AND DIAGNOSTICS

537. Aglitskiy, Ye. V., V. A. Boyko, L. A. Vaynshteyn, S. M. Zakharov, O. N. Krokhin, and G. V. Sklizkov (0). Observation of resonant transition satellites of hydrogen- and helium-like ions of Mg and Al in a laser plasma. *OiS*, v. 35, no. 5, 1973, 963-966.
538. Aksenov, V. A., V. M. Yeroshenko, A. A. Mushinskiy, and L. N. Pyatnitskiy (91). Mechanical scanning apparatus for recording spectra of light scattered by a plasma. *PTE*, no. 5, 1973, 210-213.
539. Andreyev, N. Ye., V. V. Pustovalov, V. P. Silin, and V. T. Tikhonchuk (1). Nonstationary parametric turbulence of a plasma. *ZhETF P*, v. 18, no. 10, 1973, 624-629.
540. Andryukhina, E. D., G. S. Voronov, A. D. Smirnova, Yu. V. Khol'nov, O. I. Fedyanin, and I. S. Shpigel' (0). Laser plasma confinement in the Tor-1 stellarator. IN: 3rd International Symposium in Toroidal Plasma Confinement. Garching, 1973, Proceedings. Garching. (No date of publication). (RZhF, 11/73, no. 11G255)
541. Andryukhina, E. D., M. A. Blokh, G. S. Voronov, O. I. Fedyanin, Yu. V. Khol'nov, and I. S. Shpigel' (0). Injection of laser plasma into a stellarator. IN: Sb 24, 81. (RZhF, 9/73, no. 9G373)
542. Basov, N. G., V. A. Boyko, S. M. Zakharov, O. N. Krokhin, Yu. A. Mikhaylov, G. V. Sklizkov, and S. I. Fedotov (1). Mechanisms of neutron generation in a laser plasma. *ZhETF P*, v. 18, no. 5, 1973, 314-317.

543. Basov, N. G., M. M. Butslov, P. G. Kryukov, Yu. A. Matveyets, Ye. A. Smirnova, B. M. Stepanov, S. D. Fanchenko, S. V. Chekalin, and R. V. Chikin (1). Direct observation of the picosecond structure of radiation pulses from a mode-locked neodymium laser. ZhETF, v. 65, no. 3, 1973, 907-916.
544. Bergel'son, V. I., A. P. Gol'tub', I. V. Nemchinov, and S. P. Popov (0). Plasma generation in a layer of vapor produced under the action of laser radiation on a solid. IN: Sb 2, 20-27.
545. Ciura, A. I., I. N. Mihailescu, and I. M. Popescu (NS). Plasma generation from laser interaction with a solid target. Stud. si cerc. fiz., v. 25, no. 3, 1973, 341-358. (RZhRadiot, 11/73, no. 11Yel71)
546. Denus, S., Z. Jankiewicz, S. Kaliski, S. Kowalski, S. Nagraba, W. Nowakowski, P. Parys, E. Stefaniuk, J. Szydlak, W. Szypula, R. Wodnicki, J. Wolski, and J. Wolowski (NS). Generation of fusion neutrons in plasma produced by a strong laser pulse. Bulletin de l'Academie Polonaise des Sciences. Serie des Sciences Techniques, no. 11, 1973, 121(937)-130(946).
547. Caleyev, A. A., G. Laval', T. O'Neyl, M. Rozenblyut, and R. Z. Sagdeyev (74). Interaction of a high power electromagnetic wave with a plasma. ZhETF, v. 65, no. 3, 1973, 973-989.
548. Gribkov, V. A., V. M. Korzhavin, O. N. Krokhin, V. Ya. Nikulin, G. V. Sklizkov, N. V. Filippov, and T. I. Filippova (0). Experimental study of cumulative phenomena in plasma. IN: Sb 24, 64. (RZhMekh, 10/73, no. 10B97)
549. Gribkov, V. A., O. N. Krokhin, G. V. Sklizkov, N. V. Filippov, and T. I. Filippova (1). High power neutron source based on the Z-pinch. ZhETF P, v. 18, no. 9, 1973, 541-544.

550. Jach, K., S. Kaliski, and R. Swierczynski (NS). Numerical analysis of the averaged equations of laser heating of two-temperature plasma in a focus system with consideration of the fusion energy. Proc. Vibrat. Probl. Pol. Acad. Sci., v. 14, no. 1, 1973, 73-84. (RZhF, 9/73, no. 9G314)
551. Jach, K., S. Kaliski, and R. Swierczynski (NS). Numerical analysis of averaged equations of laser compression of a D-T sphere with a shell. Biul. WAT J. Dabrowskiego, v. 22, no. 5, 1973, 17-37. (RZhF, 10/73, no. 10G258)
552. Kaliski, S. (NS). Averaged equations of laser heating of two-temperature plasma with recovery of fusion energy, taking into account thermal and shock wave fronts. Bulletin de l'Academie Polonaise des Sciences. Serie des Sciences Techniques, no. 9, 1973, 105(731)-116(742).
553. Kaliski, S. (NS). Averaged equations for describing laser heating of a plasma, taking into account the energy released through nuclear fusion and the presence of heat and shock wave fronts. Biul. WAT J. Dabrowskiego, v. 22, no. 4, 1973, 11-24. (RZhMekh, 9/73, no. 9B682)
554. Kaliski, S. (NS). Self-similar averaged equations for describing a concentric compressed plasma during laser heating. Biul. WAT J. Dabrowskiego, v. 22, no. 4, 1973, 25-41. (RZhMekh, 9/73, no. 9B681)
555. Kotsubanov, V. D., A. Ya. Leykin, and O. S. Pavlichenko (O). Problem of improving laser effectiveness in experiments on scattering of light in a plasma. IN: Sb 25, 208-212. (RZhF, 10/73, no. 10G64)

556. Kudrevatova, O. V., L. V. Norinskiy, and V. A. Pryadein (0). Study of frequency dependence of optical breakdown in air. ZhTF, no. 11, 1973, 2347-2353.
557. Makhankov, V. G., and V. N. Tsy'ovich (0). Anomalous heating of a dense plasma by laser radiation. Physica scripta [Sweden], v. 7, no. 5, 1973, 234-240. (RZhF, 11/73, no. 11G137)
558. Ostrovskaya, G. V., and A. N. Zaydel' (4). Laser spark in gases. UFN, v. 111, no. 4, 1973, 579-615.
559. Ped'ko, V. A. (0). Photoionization of a complex-molecule vapor under the action of a high power laser. IN: Sb 6, 10-11. (RZhKh, 19ABV, 24/73, no. 24B1464)
560. Pustovalov, V. V., V. P. Silin, and V. T. Tikhonchuk (1). Nonlinear conversion of radiation to plasma waves. ZhETF, v. 65, no. 5, 1973, 1880-1892.
561. Razmadze, N. A., and Z. D. Chkuaseli (0). Determining the ion and electron concentration in a plasma from absorption of laser radiation. ZhPS, v. 19, no. 4, 1973, 628-631.
562. Rupasov, A. A., G. V. Sklizkov, V. P. Tsapenko, and A. S. Shikanov (1). Study of the reflection of laser radiation from a dense plasma. ZhETF, v. 65, no. 5, 1973, 1898-1904.

### III. MONOGRAPHS

563. Afanas'yev, Yu. V., V. A. Gribkov, O. N. Krokhin, V. Ya. Nikulin, G. V. Sklizkov, and M. A. Sultanov (1). Kumulyativnyye efekty v lazernoy plazme. Ch. 1 (Cumulation effects in a laser plasma. Part 1). Fizicheskiy institut AN SSSR. Laboratoriya kvantovoy radiofiziki. Preprint, no. 87, Moskva, 1973, 32 p. (RZhF, 11/73, no. 11G260)
564. Alekseyev, V. A., T. I. Andreyeva, and I. I. Sobel'man (1). K teorii nelineynykh rezonansov moshchnosti gazovykh lazerov (Theory of nonlinear resonance of power in gas lasers). Fizicheskiy institut AN SSSR. Laboratoriya kvantovoy radiofiziki. Preprint, no. 175, Moskva, 1972, 22 p. (RZhF, 9/73, no. 9D717)
565. Antonov, V. B., F. G. Geokchayev, and E. Yu. Salayev (60). Generator tokovykh impul'sov dlya возбуждения инжекционных лазерov (Generator of current pulses for excitation of injection lasers). AN AzSSR. Institut fiziki. Preprint no. 20, Baku, 1973, 7 p. (KLDV, 10/73, no. 20707)
566. Antonov, Ye. N., V. G. Koloshnikov, V. G. Mironenko, and D. N. Nikogosyan (72). Lazer na krasitele nepreryvnogo deystviya (Continuous wave dye laser). AN SSSR. Institut spektroskopii. Preprint, no. 9, Moskva, 1973, 4 p. (KLDV, 10/73, no. 20739)
567. Basov, N. G., O. N. Krokhin, A. A. Rupasov, G. V. Sklizkov, and S. I. Fedotov (1). Zadayushchiy generator i sistema predvaritel'nykh kaskadov usileniya moshnoy lazernoy ustanovki dlya vysokotemperaturnoy nagreva plazmy (Master oscillator and system of preamplification stages of a high power laser assembly for high temperature heating of plasma). AN SSSR. Fizicheskiy institut. Laboratoriya kvantovoy radiofiziki. Preprint, no. 47. Moskva, 1973, 48 p. (RZhF, 9/73, no. 9G402)

568. Bayev, V. M., A. N. Savchenko, and E. A. Sviridenkov (1). Issledovaniye proboya rubina tsugom i odinochnymi ul'trakorotkimi impul'sami (Study of the breakdown of ruby by a train of and by individual ultrashort pulses). AN SSSR. Fizicheskiy institut. Preprint, no. 52, Moskva, 1973, 16 p. (KLDV, 10/73, no. 20430)
569. Belostotskiy, B. R., Yu. V. Lyubavskiy, and V. M. Ovchinnikov (0). Osnovy lazernoy tekhniki. Tverdotel'nyye OKG (Fundamentals of laser technology. Solid state lasers). Moskva, Sovetskoye radio, 1972, 408 p. (UFN, v. III, no. 3, 1973, 571).
570. Belyayev, V. P., I. I. Devyatkin, V. F. Martynov, and A. S. Fedorov (0). Nekotoryye primeneniya gazovykh lazerov (Some applications of gas lasers). In Latvian, translated from Russian. Riga, Izd-vo Liyesma, 1973, 55 p. (KL, 39/73, no. 33085)
571. Biryukov, A. S., and L. A. Shelepin (1). Kinetika fizicheskikh protsessov v gazodinamicheskikh lazerakh. Vliyaniye formy sopla na inversiyu. Vysokotemperaturnyye lazery (Kinetics of physical processes in gasdynamic lasers. Effect of the jet nozzle shape on inversion. High temperature lasers). Fizicheskiy institut AN SSSR. Preprint, no. 59, Moskva, 1973, 53 p. (RZhF, 9/73, no. 9D763)
572. Boyko, V. A., Yu. A. Drozhbin, S. M. Zakharov, O. N. Krokhin, V. Ya. Nikulin, S. A. Pikuz, G. V. Sklizkov, A. Ya. Fayenov, Yu. V. Chertov, and V. A. Yakovlev (1). Issledovaniya neytronnogo vykhoda, rentgenovskogo izlucheniya i skorostnaya interferometriya lazernoy plazmy pri potokakh nagrevayushchego izlucheniya  $\sim 10^{14}$  vt/sm<sup>2</sup> (Study of neutron yield and x-radiation and fast interferometry of a laser plasma during heating from flux levels of  $10^{14}$  w/cm<sup>2</sup>). Fizicheskiy institut AN SSSR. Preprint, no. 77. Moskva, 1973, 48 p. (RZhF, 10/73, no. 10G262)

573. Chumak, G. M. (79). CO<sub>2</sub> laser. Khimicheskoye возбуждениye (CO<sub>2</sub> laser. Chemical excitation). Institut yadernoy fiziki SO AN SSSR. Preprint. IYaF 91-72, Novosibirsk, 1972, 17 p. (KLDV, 10/73, no. 20493)
574. Fedorov, B. F. (0). Lazery i ikh primeneniye (Lasers and their application). Moskva, Izd-vo DOSAAF, 1973, 161 p. (LC)
575. Fel'dman, G. A. (289). Raschet i vybor opticheskikh elementov geodezicheskikh svetodal'nomerov (optimizatsiya parametrov). (Design and selection of optical elements for geodetic DME's (optimization of parameters)). Moskva, Nedra, 1973, 97 p. (KL, 38/73, no. 31936)
576. Fizicheskiye osnovy registratsii i obrabotki informatsii lazernogo izlucheniya (Physical bases for recording and processing of information by laser radiation). Kiyev, 1973, 76 p. (KL, 51/73, no. 43961)
577. Gabeskiriya, G. (296). Ispol'zovaniye lazera v televeshchanii (Use of the laser in television broadcasting). Tbilisi, Metsniyereba, 1973, 27 p. (KL, 41/73, no. 35067)
578. Golografiya (Holography). VNII optiko-fiz. izmereniy. Nauchnyye trudy, ser. B, no. 2, Moskva, 1972, 151 p. (RZhF, 11/73, no. 11D1477)
579. Gorbunov, L. M. (1). Perekhodnyye protsessy v parametricheski neustoychivyykh sredakh (Transient processes in parametrically unstable media). Fizicheskiiy institut AN SSSR. Preprint, no. 58. Moskva, 1973, 56 p. (RZhF, 9/73, no. 9D679)



580. Grasyuk, A. Z., I. G. Zubarev, V. I. Mishin, and V. G. Smirnov (1). Dinamika generatsii v lazere na vynuzhdennom kombinatsionnom rasseyanii (Generation dynamics in a Raman laser). AN SSSR. Fizicheskiy institut. Laboratoriya kvantovoy radiofiziki. Preprint, no. 32, Moskva, 1973, 26 p. (RZhF, 10/73, no. 10D801)
581. Im Tkhek-de, V. P. Kochanov, S. G. Rautian, et al. (79). Ushireniye i sdvig linii 0.63 mkm neona pod deystviyem toka razryada (Broadening and shift of the 0.63  $\mu$  neon line under the action of a discharge current). Novosibirsk, 1973, 15 p. (KLDV, 8/73, no. 17228)
582. Informatsionnyye lazernyye sistemy (Informational laser systems). Kiyev, 1973, 78 p. (KL, 51/73, no. 43940)
583. Lasery gazowe (Gas lasers). Pr. nauk. Inst. telekomun. i akust. PWr., no. 14, Wroclaw, 1973, 149 p. (RZhF, 11/73, no. 11D1329)
584. Letokhov, V. S. (72). Lazernoye deystviye v atmosferakh zvezd (Laser action in the atmospheres of stars). AN SSSR. Institut spektroskopii. Preprint, no. 9, Moskva, 1972, 24 p. (KLDV, 10/73, no. 20456)
585. Orayevskiy, A. N., V. P. Pimenov, and V. A. Shcheglov (1). Vliyaniye kineticheskogo obryva tsepnoy reaktsii na protsess rasprostraneniya fotokhimicheskoy volny (Effect of a kinetic cutoff of a chain reaction on the process of propagation of a photochemical wave). Fizicheskiy institut AN SSSR. Preprint, no. 115, Moskva, 1972, 16 p. (RZhKh, 19ABV, 18/73, no. 18B867)
586. Ostrovskiy, Yu. I. (0). Golografiya i yeye primeneniye (Holography and its applications). Leningrad, Nauka, Leningradskoye otdeleniye, 1973, 179 p. (LC)

587. Petrov, V. V., A. A. Kryuchin, L. I. Salyuk, and A. P. Tokar' (298). Fokusirovka lazernogo izlucheniya v opticheskikh zapominayushchikh ustroystvakh (Focusing of laser radiation in optical memory devices). AN UkrSSR. Institut elektrodinamiki. Preprint, no. 54, Kiyev, 1973, 17 p. (RZhRadiot, 11/73, no. 11Ye213)
588. Primeneniye ugolkovykh otrazhateley pri lazernoy lokatsii kosmicheskikh ob'yektov (Use of corner reflectors in laser ranging of celestial bodies). Sovet "Interkosmos". Section 6. Nauchnyye issledovaniya s pomoshch'yu nablyudeniy iskusstvennykh sputnikov Zemli (Scientific studies by means of observations from artificial earth satellites). Astronomicheskii sovet AN SSSR, 1973, 85 p. (RZhRadiot, 12/73, no. 12Ye201)
589. Problemy golografii (Problems of holography), No. 1, Conference, Tbilisi, 23-26 May 1972, Trudy. Moskva, 1973, 178 p. (KL, 49/73, no. 42088)
590. Pukhov, A. A., S. G. Rautian, and A. M. Shalagin (79). Vliyaniye uprugikh stolknoveniy na nelineynyye interferentsionnyye efekty (Effect of elastic collisions on nonlinear interference effects). In: Yadernaya fizika. Sib. otd. AN SSSR. Preprint IYaF 23-72. Novosibirsk. 1972, 31 p. (RZhF, 11/73, no. 11D1290)
591. Rasseyaniye sveta v zemnoy atmosfere. Vsesoyuznaya konferentsiya po rasseyaniyu sveta. Materialy (Scattering of light in the earth's atmosphere. All-Union conference on scattering of light, Alma-Ata, 10-14 November 1969. Materials). Alma-Ata, Nauka KazSSR, 1972, 315 p. (LC)
592. III Respublikanskiy seminar po kvantovoy elektronike 24-26 apr. Tezisy dokladov (Third Republic seminar on quantum electronics, 24-26 April. Theses of the report.). Khar'kov, 1973, 139 p. (RZhF, 10/73, no. 10D814).

593. Samson, A. M., L. A. Kotomtseva, N. A. Loyko, and I. M. Gorcharik (3). Kinetika generatsii OKG s nelineynym element zapazdyvayushchego deystviya (Generation kinetics of a laser with nonlinear delayed action elements). In-t fiz. AN BSSR. Minsk, 1973, 44p. (RZhF, 11/73, no. 11D1330)
594. Sibirskiy simpozium po lazernoy spektroskopii (Siberian symposium on laser spectroscopy). Krasnoyarsk, 25-28 September 1973. Theses of the reports. Krasnoyarsk, 1973, 125 p. (RZhKh, 19ABV, no. 24B238)
595. Sobolev, N. N., V. V. Sokovikov, and V. G. Taranenko (1). Kineticheskaya model' obrazovaniya inversii zaselennostey v gazorazryadnom lazere na okisi ugleroda (Kinetic model for producing population inversion in a CO gas discharge laser). AN SSSR. Fizicheskii institut. Laboratoriya optiki nizkoterperaturnoy plazmy. Preprint, no. 34, Moskva, 1973, 26 p. (KLDV, 8/73, no. 17552)
596. Veyko, V. P., and M. N. Libenson (0). Lazernaya obrabotka (Laser processing). Leningrad, Lenizdat, 1973, 191 p. (KL, 51/73, no. 43934)
597. Volod'kina, V. L., M. N. Libenson, V. T. Prokopenko, and L. A. Surmenko (0). Reзка tonkosloynnykh materialov izlucheniym CO<sub>2</sub> lazera (Cutting of thin layer materials by CO<sub>2</sub> laser radiation). Leningrad, Znaniye, 1973, 32 p. (KLDV, 9/73, no. 19356)
598. Yermakova, N. A., and A. S. Chirkin (2). Nelineynaya optika. Bibliografiya (Nonlinear optics. Bibliography). Moskva, Izd-vo Moskovskogo universiteta, 1973, 216 p. (LC)

#### IV. SOURCE ABBREVIATIONS

APP	-	Acta physica polonica
DAN BSSR	-	Akademiya nauk Belorusskoy SSR. Doklady
DAN SSSR	-	Akademiya nauk SSSR. Doklady
DBAN	-	Bulgarska akademiya na naukite. Doklady
EOM	-	Elektronnaya obrabotka materialov
FAiO	-	Akademiya nauk SSSR. Izvestiya. Fizika atmosfery i okeana
FGiV	-	Fizika goreniya i vzryva
FiKhOM	-	Fizika i khimiya obrabotka materialov
FMM	-	Fizika metallov i metallovedeniye
FTP	-	Fizika i tekhnika poluprovodnikov
FTT	-	Fizika tverdogo tela
IAN B	-	Akademiya nauk Belorusskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IAN Fiz	-	Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya
IAN Uzb	-	Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
I-FZh	-	Inzhenerno-fizicheskii zhurnal
IT	-	Izmeritel'naya tekhnika
IVUZ Fiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Fizika
IVUZ Geod	-	Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka
IVUZ Priboro	-	Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye
IVUZ Radioelektr	-	Izvestiya vysshikh uchebnykh zavedeniy. Radioelektronika
IVUZ Radiofiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika

KhVE	-	Khimiya vysokikh energiy
KL	-	Knizhnaya letopis'
KLDV	-	Knizhnaya letopis'. Dopolnitel'nyy vypusk
Kristal	-	Kristallografiya
KSpF	-	Kratkiye soobshcheniya po fizike
LC	-	Received at Library of Congress
MP	-	Mekhanika polimerov
NM	-	Akademiya nauk SSSR. Izvestiya. Neorganicheskiye materialy
OiS	-	Optika i spektroskopiya
OMP	-	Optiko-mekhanicheskaya promyshlennost'
Otkr izobr	-	Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki
PSS	-	Physica status solidi
PTE	-	Pribory i tekhnika eksperimenta
Radiotekh	-	Radiotekhnika
RiE	-	Radiotekhnika i elektronika
RZhF	-	Referativnyy zhurnal. Fizika
RZhFoto	-	Referativnyy zhurnal. Fotokinotekhnika
RZhGeod	-	Referativnyy zhurnal. Geodeziya i aeros"-yemka
RZhKh	-	Referativnyy zhurnal. Khimiya
RZhMekh	-	Referativnyy zhurnal. Mekhanika
RZhMetal	-	Referativnyy zhurnal. Metallurgiya
RZhMetrolog	-	Referativnyy zhurnal. Metrologiya i izmeritel'naya tekhnika
RZhRadiot	-	Referativnyy zhurnal. Radiotekhnika
Sb1	-	Sbornik. Kvantovaya elektronika, no. 3(15), Moskva, 1973.
Sb2	-	Kvantovaya elektronika, no. 4(16), Moskva, 1973.

- Sb3 - Kvantovaya elektronika, no. 7, Kiyev, 1973.
- Sb4 - Vsesoyuznaya konferentsiya po nelineynoy optiki. 6th. Minsk, 1972.
- Sb5 - Problemy golografii, no. 2, Moskva, 1973.
- Sb6 - Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya. Sovremennyye sostoyaniya i perspektivy vysokoskorostnoy fotografii i kinematografii i metrologiya bystro-  
protekayushchikh protsessov. Tezisy dokladov. Moskva, 1972.
- Sb7 - Respublikanskaya konferentsiya molodykh uchenykh po fiziki. 2nd. Materialy. Institut fiziki AN BSSR, 1972, no. 2, Minsk, 1973.
- Sb8 - Fizikokhimiya i elektrokimiya rasplavleniy soley i tverdovykh elektrolitov. Part 1. Sverdlovsk, 1973.
- Sb9 - Khimiya svyaz' v kristallakh poluprovodnikov i polumetallov. Minsk, Nauka i tekhnika, 1973.
- Sb10 - Rasseyaniye sveta v zemnoy atmosfere. Vsesoyuznaya konferentsiya po rasseyaniyu sveta, Alma-Ata, 10-14 November 1969. Materialy. Alma-Ata, Nauka KazSSR, 1972.
- Sb11 - Voprosy issledovaniy nizhnoy atmosfery i geomagnetizma. SOAN. Institut geologii i geofiziki, Novosibirsk, 1973.
- Sb12 - Radioelektronika letatel'nykh apparatov. no. 5, Khar'kov, 1973.
- Sb13 - Voprosy izlucheniya i priyema signalov v usloviyakh deystviya pomekh peredacha soobshcheniy s obratnoy svyaz'yu, no. 3, voronezh, 1972.
- Sb14 - Lineynyye i uglovyye izmereniya. Moskva, 1973.
- Sb15 - Generatory plazmenykh struy i sil'notochnogo dugi. Leningrad, Nauka, 1973.
- Sb16 - Voprosy teorii i proyektirovaniya preobrazovateley informatsii. Kiyev, 1973.
- Sb17 - Teoriya i praktika peremeshivaniya v zhidkikh sredakh. Moskva, 1973.

Sb18	-	Izmereniye absolyutnogo znacheniya gravitatsionnogo uskoreniya. Novosibirsk, 1972.
Sb19	-	Khimiya metallicheskih splavov. Moskva, Nauka, 1973.
Sb20	-	Chislovoye programmnoye upravleniye tekhnologicheskikh oborudovaniy. Kiyev, Tekhnika, 1973.
Sb21	-	Voprosy nauki v trudakh molodykh uchenykh Yakutii. Yakutsk, 1971.
Sb22	-	Teplofizicheskiye svoystva i gazodinamika vysokotemperaturnykh sred. Moskva, Nauka, 1972.
Sb23	-	Metallofizika, no. 45, 1973.
Sb24	-	5th European Conference on Controlled Fusion and Plasma Physics, Grenoble, 1972. Vol. 1. Grenoble. No date of publication.
Sb25	-	Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza, no. 4, 1973.
TKiT	-	Tekhnika kino i televideniya
Tr1	-	VNII optiko-fizicheskikh izmereniy. Nauchnyye trudy, ser. (letter) V, no. 2, 1973.
Tr2	-	VNII lyuminoforov i osobo chistykh veshchestv. Sbornik nauchnykh trudov, no. 8, 1973.
Tr3	-	Yerevanskiy universitet. Yestestvennykh nauk. Uchenyye zapiski, no. 3(121), 1972.
Tr4	-	Ryazanskiy radiotekhnicheskiy institut. Trudy, no. 37, 1972.
Tr5	-	Institut mekhaniki Moskovskogo universiteta. Nauchnyye trudy, no. 21, 1973.
Tr6	-	Tashkentskiy universitet. Nauchnyye trudy, no. 447, 1973.
Tr7	-	VNII optiko-fizicheskikh izmereniy. Nauchnyye trudy, ser. (letter) V, no. 1, 1972.
Tr8	-	TsNII svyazi. Sbornik nauchnykh trudov, no. 2, 1972.
Tr9	-	VNII optiko-fizicheskikh izmereniy. Nauchnyye trudy, ser. B, no. 2, 1972.

Tr10	-	Moskovskiy energeticheskiy institut. Trudy, no. 165, 1973.
TVT	-	Teplofizika vysokikh temperatur
UFN	-	Uspekhi fizicheskikh nauk
UFZh	-	Ukrainskiy fizicheskiy zhurnal
VAN	-	Akademiya nauk SSSR. Vestnik
VNDKh SSSR	-	VNDKh SSSR. Informatsionnyy byulleten'
VMU	-	Moskovskiy universitet. Vestnik. Seriya fizika, astronomiya
ZhETF	-	Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhETF P	-	Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhFKh	-	Zhurnal fizicheskoy khimii
ZhNiPFiK	-	Zhurnal nauchnoy i prikladnoy fotografii i kinematografii
ZhPMTF	-	Zhurnal prikladnoy mekhaniki i teoreticheskoy fiziki
ZhPS	-	Zhurnal prikladnoy spektroskopii
ZhTF	-	Zhurnal tekhnicheskoy fiziki



## V. CUMULATIVE AFFILIATIONS LIST

NS. Non-Soviet

0. Affiliation not shown
1. Physics Institute im. Lebedev, AN SSSR, Moscow (Fizicheskiy institut im. Lebedeva).
2. Moscow State University (Moskovskiy gosudarstvennyy universitet).
3. Institute of Physics, AN BSSR, Minsk (Institut fiziki, AN BSSR).
4. Leningrad Physical-technical Institute im. Ioffe (Fiziko-tehnicheskiy institut im. Ioffe).
5. Institute of Physics, AN UkrSSR, Kiev (Institut fiziki, AN UkrSSR).
6. Institute of Semiconductors, AN UkrSSR, Kiev (Institut poluprovodnikov, AN UkrSSR).
7. State Optical Institute im. Vavilov, Leningrad (Gosudarstvennyy opticheskiy institut im. Vavilova).
8. Radiophysics Scientific Research Institute at Gor'kiy State University (Gor'kovskiy nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom gos. universitete).
9. Institute of Radiophysics and Electronics, Siberian Branch AN SSSR, Novosibirsk (Institut radiofiziki i elektroniki, Sib. otdel AN SSSR).
10. Institute of Semiconductor Physics of the Siberian Branch, AN SSSR, Novosibirsk (Institut fiziki poluprovodnikov, Sib. otdel AN SSSR).
11. Kazan' State University (Kazanskiy gos. universitet).
12. Leningrad State Universitet (Leningradskiy gos. universitet).
13. Institute of Crystallography, AN SSSR, Moscow (Institut kristallografiya, AN SSSR).
14. University of Friendship Among Nations im. Lumumba, Moscow (Universitet druzhby narodov im. Lumumby).
15. Institute of Radio Engineering and Electronics, AN SSSR, Moscow (Institut radiotekhniki i elektroniki, AN SSSR).
16. Moscow Engineering Physics Institute (Moskovskiy inzhenerno-fizicheskiy institut).
17. Institute of Mechanical Problems, AN SSSR, Moscow (Institut problem mekhaniki, AN SSSR).

18. Institute of General and Inorganic Chemistry im. Kurnakov, AN SSSR, Moscow (Institut obshchey i neorganicheskoy khimii im. Kurnakova, AN SSSR).
19. Moscow Power Engineering Institute (Moskovskiy energeticheskiy institut).
20. All Union Scientific Research Institute of Physicotechnical and Electronic Measurements, Moscow (Vsesoyuznyy nauchno-issled. institut fiziko-tekhnicheskikh i elektronnykh izmereniy).
21. Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut, AN SSSR).
22. Institute of metallurgy im. Baykov, Moscow (Institut metallurgii im. Baykova).
23. Institute of Atomic Energy im. Kurchatov, Moscow (Institut atomnoy energii im. Kurchatova).
24. Moscow Higher Technical College im. Bauman (Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana).
25. Moscow Scientific Research Institute of Instrument Manufacture (Moskovskiy nauchno-issled. institut instrumental'nogo proizvodstva).
26. Central Scientific Research Institute of the Ministry of Defense, Moscow (Tsentral'nyy nauchno-issled. institut Ministerstva oborony).
27. All Union Scientific Research Institute of Textile and Light Machinery, Moscow (Vsesoyuznyy nauchno-issled. institut tekstil'nogo i legkogo mashinostroyeniya).
28. Leningrad Opticomechanical Society (Leningradskoye optiko-mekhanicheskoye obshchestvo)
29. Leningrad Polytechnic Institute (Leningradskiy politekhnicheskiy institut).
30. Leningrad Institute of Precision Mechanics and Optics (Leningradskiy institut tochnoy mekhaniki i optiki).
31. Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov, AN SSSR).

32. Physics Scientific Research Institute at Leningrad State University (Fizicheskiy nauchno-issled. institut pri Leningradskom gos. universitete).
33. Institute of Silicate Chemistry im. Grebanshchikov, AN SSSR, Leningrad (Institut khimii silikatov im. Grebanshchikova, AN SSSR).
34. Khar'kov State University (Khar'kovskiy gos. universitet).
35. Khar'kov Institute of Radioelectronics (Khar'kovskiy institut radio-elektroniki).
36. Physicotechnical Institute of Low Temperatures, AN UkrSSR, Khar'kov (Fiziko-tekhicheskiy institut nizkikh temperatur, AN UkrSSR).
37. Yerevan State University (Yerevanskiy gos. universitet).
38. Kazan' Physicotechnical Institute (Kazanskiy fiziko-tekhicheskiy institut).
39. Institute of Cybernetics, AN GruzSSR (Institut kibernetiki, AN GruzSSR).
40. Tbilisi State University (Tbilisskiy gos. universitet).
41. Rostov-on-Don State University (Rostovskiy-na-Donu gos. universitet).
42. Ural Polytechnic Institute im. Kirov, Sverdlovsk (Ural'skiy poli-tekhicheskiy institut im. Kirova).
43. Ural State University, Sverdlovsk (Ural'skiy gos. universitet).
44. Institute of Applied Physics, AN MSSR, Kishinev (Institut prikladnoy fiziki, AN MSSR).
45. Saratov State University (Saratovskiy gos. universitet).
46. Novosibirsk State University (Novosibirskiy gos. universitet).
47. Siberian Physicotechnical Institute im. Kuznetsov, Tomsk (Sibirskiy fiziko-tekhicheskiy institut im. Kuznetsova).
48. Tomsk Institute of Radio Engineering and Electronics (Tomskiy institut radiotekhniki i elektroniki).
49. Vilnius State University (Vil'nyusskiy gos. universitet).
50. Institute of Semiconductor Physics, AN LitSSR, Vilnius (Institut fiziki poluprovodnikov, AN LitSSR).

51. Kiev State University (Kiyevskiy gos. universitet).
52. Joint Institute of Nuclear Research, Dubna (Ob'yedinennyy institut yadernykh ispytaniy).
53. Chernovitsy State University (Chernovitskiy gos. universitet).
54. Taganrog Radio Engineering Institute (Taganrozhskiy radiotekhnicheskii institut).
55. Physicotechnical Institute, AN TurkSSR, Ashkhabad (Fiziko-tekhnicheskii institut, AN TurkSSR).
56. Nezhin State University (Nezhinskiy gos. universitet).
57. All Union Machine Construction Institute, Kramatorsk (Vsesoyuznyy mashinostroitel'nyy institut).
58. Kemerova State Pedagogical Institute (Kemerovskiy gos. pedagogicheskii institut).
59. Institute of Physics Research, AN ArmSSR (Institut fizicheskikh issled., AN ArmSSR).
60. Institute of Physics, AN AzSSR (Institut fiziki, AN AzSSR).
61. Institute of Physics and Astronomy, AN EstSSR (Institut fiziki i astronomii, AN EstSSR).
62. Institute of Geophysics, AN GruzSSR (Institut geofiziki, AN GruzSSR).
63. Institute of Physics, AN LatSSR (Institut fiziki, AN LatSSR).
64. Institute of Atmospheric Physics, AN SSSR (Institut fiziki atmosfery, AN SSSR).
65. Institute of Problems of Physics, AN SSSR (Institut fizicheskikh problem, AN SSSR).
66. Institute of Solid State Physics, AN SSSR (Institut fiziki tverdogo tela, AN SSSR).
67. Institute of Physics of Chemistry, AN SSSR (Institut khimicheskoy fiziki, AN SSSR).
68. Institute of Space Research, AN SSSR (Institut kosmicheskikh issledovaniy, AN SSSR).

69. Institute of Oceanography, AN SSSR (Institut okeanologii, AN SSSR).
70. Institute of Organic and Physical Chemistry, AN SSSR (Institut organicheskoy i fizicheskoy khimii, AN SSSR).
71. Institute of Applied Mathematics, AN SSSR (Institut prikladnoy matematiki, AN SSSR).
72. Institute of Spectroscopy, AN SSSR (Institut spektroskopii, AN SSSR).
73. Institute of Theoretical Physics im. Landau, AN SSSR (Institut teoreticheskoy fiziki im. Landau, AN SSSR).
74. Institute of High Temperatures, AN SSSR (Institut vysokikh temperatur, AN SSSR).
75. Institute of Automation and Electronic Measurements, Siberian Branch AN SSSR (Institut avtomatiki i elektrometrii, Sib. otdel. AN SSSR).
76. Institute of Hydrodynamics, Siberian Branch AN SSSR (Institut gidrodinamiki, Sib. otdel. AN SSSR).
77. Institute of Inorganic Chemistry, Siberian Branch AN SSSR (Institut neorganicheskoy khimii, Sib. otdel. AN SSSR).
78. Institute of Atmospheric Optics, Siberian Branch AN SSSR (Institut optiki atmosfery, Sib. otdel. AN SSSR).
79. Institute of Nuclear Physics, Siberian Branch AN SSSR (Institut yadernoy fiziki, Sib. otdel. AN SSSR).
80. Computer Center, Siberian Branch AN SSSR (Vychislitel'nyy tsentr, Sib. otdel AN SSSR).
81. Physicomechanical Institute, AN UkrSSR (Fiziko-mekhanicheskiy institut, AN UkrSSR).
82. Physicotechnical Institute, AN UkrSSR (Fiziko-tekhnicheskiy institut, AN UkrSSR).
83. Institute of Problems in Material Studies, AN UkrSSR (Institut problem materialovedeniya, AN UkrSSR).
84. Institute of Radiophysics and Electronics, AN UkrSSR (Institut radiofiziki i elektroniki, AN UkrSSR).
85. Institute of Nuclear Physics, AN UzSSR (Institut yadernoy fiziki, AN UzSSR).

86. Azerbaydzhan State University (Azerbaydzhanskiy gos. universitet).
87. Belorussian State University (Belorusskiy gos. universitet).
88. Dagestan State University (Dagestanskiy gos. universitet).
89. Donetsk State University (Donetskiy gos. universitet).
90. Electrotechnical Institute of Communications (Elektrotekhnicheskiy institut svyazi).
91. Power Institute im. Krzhizhanovskiy (Energeticheskiy institut im. Krzhizhanovskogo).
92. Physicochemical Institute im. Karpov (Fiziko-khimicheskiy institut im. Karpova).
93. Gor'kov Physicotechnical Research Institute at Gor'kov State University (Gor'kovskiy issled. fiziko-tekhicheskiy institut pri Gor'kovskom gos. universitete).
94. Gor'kov State University (Gor'kovskiy gos. universitet).
95. State Scientific Research and Planning Institute of the Rare Metals Industry (GIREDMET, Gos. nauchno-issled. proyektnyy institut redkometallicheskey promyshlennosti).
96. State Scientific Research Institute of Photochemical Planning (GOSNIKhIMFOTOPROYEKT)
97. Georgian Polytechnical Institute (Gruzinskiy politekhnicheskiy institut).
98. Institute of Nuclear Physics at Moscow State University (Institut yadernoy fiziki pri Moskovskom gos. universitete).
99. Institute of Mechanics and Physics, Saratov (Institut mekhaniki i fiziki).
100. Institute of Oncology im. Petrov (Institut onkologii im. Petrova).
101. Ivanovo State Medical Institute (Ivanovskiy gos. meditsinskiy institut).
102. Ivanovo Chemicotechnological Institute (Ivanovskiy khimiko-tekhnologicheskiy institut).
103. Ivanovo Pedagogical Institute (Ivanovskiy pedagogicheskiy institut).
104. Kaunas Polytechnic Institute (Kaunasskiy politekhnicheskiy institut).



105. Kazan' Civil Engineering Institute (Kazanskiy inzhenerno-stroitel'skiy institut).
106. Kiev Polytechnic Institute (Kiyevskiy politekhnicheskiy institut).
107. Khar'kov State Scientific Research Institute of Metrology (Khar'kovskiy gos. nauchno-issled. institut metrologii).
108. Khar'kov Polytechnic Institute (Khar'kovskiy politekhnicheskiy institut).
109. Latvian State University (Latviyskiy gos. universitet).
110. Leningrad Electrotechnical Institute (Leningradskiy elektrotekhnicheskiy institut).
111. Leningrad Mining Institute (Leningradskiy gornyy institut).
112. Leningrad Institute of Soviet Trade (Leningradskiy institut Sovetskoy trgovli).
113. Leningrad Mechanical Institute (Leningradskiy mekhanicheskiy institut).
114. L'vov State University (L'vovskiy gos. universitet).
115. L'vov Polytechnic Institute (L'vovskiy politekhnicheskiy institut).
116. Moscow Aviation Institute (Moskovskiy aviatsionnyy institut).
117. Moscow Mining Institute (Moskovskiy gornyy institut).
118. Moscow Physicotechnical Institute (Moskovskiy fiziko-tekhnicheskiy institut).
119. Moscow Institute of Electronic Engineering (Moskovskiy institut elektronnyy tekhniki).
120. Moscow Institute of Engineers of Geodesy, Aerial Photography and Cartography (Moskovskiy institut inzhenerov geodezii, aerofotos'yemki i kartografii).
121. Moscow Institute of Chemical Machinery (Moskovskiy institut khimicheskogo mashinostroyeniya).
122. Scientific Research Institute of Physicochemistry im. Karpov (Nauchno-issled. fiziko-khimicheskiy institut im. Karpova).
123. Novosibirsk Institute of Automation and Electrometallurgy (Novosibirskiy institut avtomatiki i elektrometallurgii).

124. Odessa Scientific Research Institute of Eye Disease and Tissue Therapy (Odesskiy nauchno-issled. institut glaznykh bolezney i tkanevoy terapii).
125. Odessa Technological Institute of Refrigeration Industry (Odesskiy tekhnologicheskii institut kholodil'noy promyshlennosti).
126. Omsk Polytechnic Institute (Omskiy politekhnicheskii institut).
127. Rostov Civil Engineering Institute (Rostovski inzhenerno-stroitel'nyy institut).
128. Ryazan' Radiotechnical Institute (Ryazanskiy radiotekhnicheskii institut).
129. Siberian State Scientific Research Institute of Metrology (Sibirskiy gos. nauchno-issled. institut metrologii).
130. Tadzhik State University (Tadzhikskiy gos. universitet).
131. Tartu State University (Tartusskiy gos. universitet).
132. Tomsk State University (Tomskiy gos. universitet).
133. Central Aerohydrodynamic Institute im. Zhukovskiy (Tsentral'nyy aerogidrodinamicheskii institut).
134. Central Aerological Observatory (Tsentral'naya aerologicheskaya observatoriya).
135. Central Scientific Research Institute of Communications (Tsentral'nyy nauchno-issled. institut svyazi).
136. Uzhgorod State University (Uzhgorodskiy gos. universitet).
137. Voronezh State University (Voronezhskiy gos. universitet).
138. Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskii institut).
139. All Union Electrotechnical Institute (Vsesoyuznyy elektrotekhnicheskii institut).
140. All Union Scientific Research Institute of Physicotechnical and Radiotechnical Measurements (VNIFTRI).
141. All Union Scientific Research Institute of Opticophysical Measurements (Vsesoyuznyy nauchno-issled. institut optiko-fizicheskikh izmereniy).



142. All Union Scientific Research Institute for Synthesis of Mineral Ore (VNII sinteza mineral'nogo syr'ya).
143. All Union Scientific Research Institute of Synthetic Rubber (VNI I sinteticheskogo kauchuka).
144. All Union Scientific Research Institute of Television and Radio Broadcasting (VNII televideniya i radioveshchaniya).
145. All Union Correspondence Electrotechnical Institute of Communications (Vsesoyuznyy zaachnyy elektrotekhnicheskiy institut svyazi).
146. Yerevan Physics Institute (Yerevanskiy fizicheskiy institut).
147. Moscow Highway Institute (Moskovskiy avtodorozhnyy institut, MADI).
148. Institute of Terrestrial Magnetism, the Ionosphere and Radiowave Propagation, AN SSSR (Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln, IZMIRAN, AN SSSR).
149. Leningrad Shipbuilding Institute (Leningradskiy korablestroitel'nyy institut).
150. Dnepropetrovsk State University (Dnepropetrovskiy gos universitet).
151. Kishinev State University (Kishinevskiy gos universitet).
152. Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov, MISI).
153. Kiev Civil Engineering Institute (Kiyevskiy inzhenerno-stroitel'skiy institut, KISI).
154. Marine Hydrophysical Institute, AN UkrSSR (Morskoy gidrofizicheskiy institut, AN UkrSSR).
155. North Osetinsk State University (Severo-Osetinskiy gos universitet).
156. Mountain Agricultural Institute (Gorskiy sel'skokhozyaystvennyy institut).
157. All Union Scientific Research, Planning and Design Institute of Electric Equipment, Khar'kov (VNI i proyektno-konstruktorskiy institut elektroaparatov).
158. Military Medical Academy, Leningrad (Voyenno-meditsinskaya akademiya).
159. Institute of Thermophysics, Siberian Branch, AN SSSR, Novosibirsk (Institut teplofiziki, SOAN).

160. Scientific Research Institute of Hydrometeorological Instrument Manufacture (NII gidrometeorologeskogo priborostroyeniya).
161. Moscow Institute of Radio Engineering, Electronics and Automation (Moskovskiy institut radiotekhnika, elektroniki i avtomatiki).
162. Moscow State Pedagogical Institute (Moskovskiy gos pedagogicheskiy institut).
163. All Union Scientific Research Institute of Metrology im. Mendeleyev (VNII metrologii im Mendeleyeva).
164. Special Design Bureau for Analytical Instrument Manufacture, AN SSSR (Spetsial'noye konstruktorskoye byuro analiticheskogo priborostroyeniya AN SSSR).
165. Kazan' Command Engineering College (Kazanskoye vyssheye komandno-inzhenernoye uchilishche).
166. Riga Polytechnic Institute (Rizhskiy politekhnicheskiy institut).
167. Institute of Petrochemical Synthesis im. Topchiyev, AN SSSR, Moscow (Institut neftekhimicheskogo sinteza im Topchiyeva AN SSSR).
168. Institute of Electric Welding im. Paton, AN UkrSSR, Kiev (Institut elektrosvarki im Patona AN Ukr SSR).
169. Department of Telecommunications of the All Union State Planning, Surveying and Scientific Research Institute of Power Systems and Electric Power Networks (Otdel dal'nykh peredach Vsesoyuznogo gosudarstvennogo proyektno-izyskatel'skogo i nauchno-issledovatel'skogo instituta energeticheskikh sistem i elektricheskikh setey, Energoset'proyekt).
170. Moscow Machine Tool Institute (Moskovskiy stankoinstrumental'nyy institut).
171. Leningrad Institute for the Advanced Training of Physicians (Leningradskiy institut usovershenstvovaniya vrachey).
172. Main Astronomical Observatory AN UkrSSR (Glavnaya astronomicheskaya observatoriya AN UkrSSR).
173. Ul'yanovsk Polytechnic Institute (Ul'yanovskiy politekhnicheskiy institut).
174. Scientific Research Institute of Organic Intermediates and Dyestuffs, Moscow (NII organicheskikh poluproduktov i krasiteley).
175. Arctic and Antarctic Scientific Research Institute, Leningrad (Arkticheskoy i antarkticheskoy NII).

176. Moscow Geological Prospecting Institut im Ordzhonikidze (Moskovskiy geologorazvedochnyy institut im Ordzhonikidze).
177. Riga Institute for Civil Aviation Engineers (Rizhskiy institut inzhenerov grazhdanskoy aviatsii).
178. Moscow Institute of Chemical Technology im. Mendeleyev (Moskovskiy khimiko-tekhnikheskiy institut im Mendeleyeva).
179. Moscow Institute of Fine Chemical Technology im. Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii im Lomonosova).
180. Institute of Heat and Mass Exchange, AN BSSR (Institut teplo- i massoobmena AN BSSR).
181. Institute of Nuclear Research, AN UkrSSR, Kiev (Institut yadernykh issledovaniy AN UkrSSR).
182. Kiev Communications College of Military Engineering (Kiyevskoye vyssheye voyennoye inzhenernoye uchilishche svyazi).
183. Physico-technical Institute, AN BSSR (Fiziko-tekhnikheskiy institut AN BSSR).
184. Institute of Geochemistry and Analytical Chemistry im. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii im Vernadskogo AN SSSR).
185. Gor'kiy Polytechnic Institute (Gor'kovskiy politekhnicheskiv institut).
186. Kishinev Pedagogical Institute (Kishinevskiy pedagogicheskii institut).
187. Institute of Epidemiology and Microbiology im. Gameleya, AMN SSSR, Moscow (Institut epidemiologii i mikrobiologii im Gamelei AMN SSSR).
188. All Union Scientific Research Institute of Single Crystals, Khar'kov (VNII monokristallov).
189. Novocherkassk Polytechnic Institute (Novocherkasskiy politekhnicheskii institut).
190. Central Scientific Research Institute of the Maritime Fleet (Tsentral'nyy NII morskogo flota).
191. Karaganda Polytechnic Institute (Karagandinskiy politekhnicheskii institut).
192. Belorussian Technological Institute (Belcrusskiy tekhnologicheskii institut).

193. Institute of Theoretical and Applied Mechanics, Siberian Branch AN SSSR, Novosibirsk (Institut teoreticheskoy i prikladnoy mekhaniki SOAN).
194. VIOGEM
195. Northwest Correspondence Polytechnic Institute (Severo-Zapadnyy zaochnyy politekhnicheskoy institut).
196. Institute of Organic Chemistry im. Zelinskiy, AN SSSR (Institut organicheskoy khimii im. Zelin'skogo AN SSSR).
197. Tomsk Polytechnic Institute (Tomskiy politekhnicheskoy institut).
198. Institute of Mineral Fuels, Moscow (Institut goryuchikh iskopayemykh).
199. Moscow Institute of Electronic Machinery (Moskovskiy institut elektronnoy mashinostroyeniya).
200. Khar'kov Aviation Institute (Khar'kovskiy aviatsionnyy institut).
201. Institute for Problems of Information Transmission, AN SSSR, Moscow (Institut problem peredachi informatsii AN SSSR).
202. Institute of Electronics, AN UzSSR, Tashkent (Institut elektroniki AN UzSSR).
203. Institute of General and Inorganic Chemistry, AN ArmSSR, Yerevan (Institut obshchey i neorganicheskoy khimii AN ArmSSR).
204. Institute of General Genetics, AN SSSR, Moscow (Institut obshchey genetiki AN SSSR).
205. Moscow X-ray Radiological Scientific Research Institute (Moskovskiy nauchno-issledovatel'skiy rentgeno-radiologicheskoy institut).
206. Institute of Geology and Geophysics, Siberian Branch, AN SSSR, Novosibirsk (Institut geologii i geofiziki SOAN).
207. Main Geophysical Observatory. (Glavnaya geofizicheskaya observatoriya).
208. Tula Polytechnic Institute (Tul'skiy politekhnicheskoy institut).
209. Moscow Institute of Precision Mechanics and Computer Technology (Moskovskiy institut tochnoy mekhaniki i vychislitel'noy tekhniki).
210. Institute of Physics, Siberian Branch, AN SSSR (Institut fiziki SOAN).
211. Kalinin Polytechnic Institute (Kalininskiy politekhnicheskoy institut).

212. Kuban' State University (Kubanskiy gos universitet).
213. Leningrad Technological Institute (Leningradskiy tekhnologicheskii institut).
214. Kazan' Pedagogical Institute (Kazanskiy pedagogicheskii institut).
215. Physico-technical Institute, AN Tadzh. SR (Fiziko-tekhnicheskii institut AN TadzhSSR).
216. Kazan' Aviation Institute (Kazanskiy aviatsionnyy institut).
217. Poltava Civil Engineering Institute (Poltavskiy inzhenerno-stroitel'nyy institut).
218. Second Moscow State Medical Institute im. Pirogov (Vtoroy Moskovskiy meditsinskiy institut im Pirogova).
219. Belorussian Polytechnic Institute, Minsk (Belorusskiy politekhnicheskii institut).
220. Institute of Experimental Meteorology (Institut eksperimental'noy meteorologii).
221. All Union Scientific Research Institute of Hydraulic Engineering (VNII gidrotekhniki).
222. Institute of Surgery im. Vishnevskiy, AMN SSSR (Institut khirurgii im Vishnevskogo AMN SSSR).
223. Central Institute for the Advanced Training of Physicians (Tsentral'nyy institut usovershenstvovaniya vrachey).
224. Yerevan Polytechnic Institute (Yerevanskiy politekhnicheskii institut).
225. Institute for Problems of Oncology, AN UkrSSR (Institut problem onkologii AN UkrSSR).
226. Leningrad Branch of the Mathematical Institute, AN SSSR (Leningradskoye otdeleniye Matematicheskogo instituta AN SSSR).
227. Tashkent State University (Tashkentskiy gos universitet).
228. Institute of Theoretical Physics AN UkrSSR (Institut teoreticheskoy fiziki AN UkrSSR).
229. Moscow Aviation Technological Institute (Moskovskiy aviatsionnyy tekhnologicheskii institut).



230. Novosibirsk Institute for Engineers of Geodesy, Aerial Surveying and Cartography (Novosibirskiy institut inzhenerov geodezii, aerofotos''yemki i kartografii).
231. Scientific Research Institute of Motion Pictures and Photography (Nauchno-issledovatel'skiy kinofotoinstitut, NIKFI).
232. State Scientific Research Institute of Glass (Gosudarstvennyy NII stekla).
233. Ivanovo-Frankov Pedagogical Institute (Ivanovo-Frankovskiy pedagogicheskiy institut).
234. Scientific Research Institute of Civil Aviation (NII grazhdanskoy aviatsii).
235. Tashkent State Pedagogical Institute (Tashkentskiy gos. pedagogicheskiy institut).
236. All Union Scientific Research Institute of Mining Geomechanics and Surveying (VNII gornoy geomekhaniki i marksheyderskogo dela).
237. Department of the Physics of Nondestructive Control, AN BSSR (Otdel fiziki nerazrushayushchego kontrolya AN BSSR).
238. Institute of Physics of High Pressures, AN SSSR (Institut fiziki vysokikh davleniy AN SSSR).
239. All Union State Planning, Surveying and Scientific Research Institute of Power Systems and Electric Power Networks (Vsesoyuznyy gosudarstvennyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut energeticheskikh sistem i elektricheskikh setey, ENERGOSET'-PROYEKT).
240. Odessa State University (Odesskiy gos. universitet).
241. Sverdlovsk State Pedagogical Institute (Sverdlovskiy gos. pedagogicheskiy institut).
242. Kazakh State University, Alma Ata (Kazakhskiy gos. universitet).
243. Radio Engineering Institute, AN SSSR (Radiotekhnicheskiy institut AN SSSR).
244. Moscow Scientific Research Institute of Television (Moskovskiy nauchno-issledovatel'skiy televizionnyy institut).
245. Novosibirsk State Pedagogical Institute (Novosibirskiy gos. pedagogicheskiy institut).
246. Main Astronomical Laboratory, AN SSSR (Glavnaya astronomicheskaya laboratoriya AN SSSR).

247. Scientific Research Institute of Electrophysical Equipment im. Yefremov, Leningrad (NII elektrofizicheskoy apparatury im. Yefremova).
248. Institute of Mechanics at Moscow State University (Institut mekhaniki pri Moskovskom gos universitete).
249. Omsk Agricultural Institute (Omskiy sel'skokhozyaystvennyy institut).
250. Sverdlovsk Mining Institute (Sverdlovskiy gornyy institut).
251. Tomsk Institute of Automatic Control Systems and Radioelectronics (Tomskiy institut avtomatizirovannykh sistem upravleniya i radioelektroniki).
252. Leningrad Institute of Nuclear Physics, AN SSSR (Leningradskiy institut yadernoy fiziki AN SSSR).
253. Kirghiz State University (Kirgizskiy gos. universitet).
254. Moscow Civil Engineering Institute (Moskovskiy inzhenerno-stroitel'skiy institut).
255. Tallinn Polytechnical Institute (Tallinskiy politekhnicheskiy institut).
256. Far Eastern State University, Vladivostok (Dal'nevostochnyy gos. universitet).
257. Comprehensive Institute of Natural Sciences, AN UzSSR, Nukus (Kompleksnyy institut yestestvennykh nauk AN UzSSR).
258. Institut of Theoretical Astronomy, AN SSSR (Institut teoreticheskoy astronomii AN SSSR).
259. Institut of Physics and Mathematics, AN LitSSR (Institut fiziki i matematiki AN LitSSR).
260. Kazan' Institute of Chemical Technology im. Kirov (Kazanskiy khimiko-tekhnologicheskiy institut im. Kirova).
261. Rybinsk Evening Technological Institute (Rybinskiy vecherniy tekhnologicheskiy institut).
262. Physicotechnical Institute, AN UzSSR (Fiziko-tekhnicheskiy institut AN UzSSR).
263. Astrophysical Institute, AN KazSSR (Astrofizicheskiy institut AN KazSSR).
264. Institute of Radiophysics and Electronics, AN ArmSSR (Institut radiofiziki i elektroniki AN ArmSSR).

265. Irkutsk Polytechnical Institute (Irkutskiy politekhnicheskiy institut).
266. Leningrad Forestry-Technical Academy (Leningradskaya lesnotekhnicheskaya akademiya).
267. Laboratory of Electronics, AN BSSR, Minsk (Laboratoriya elektroniki AN BSSR).
268. Scientific Research Institute of Applied Mathematics and Mechanics at Tomsk State University (NII prikladnoy matematiki i mekhaniki pri Tomskom gos universitete).
269. Dnepropetrovsk Metallurgical Institute, Zaporozh'ye Branch (Dnepropetrovskiy metallurgicheskiy institut, Zaporozhskiy filial).
270. Special Astrophysical Observatory, AN SSSR, Leningrad Branch (Spetsial'naya astrofizicheskaya observatoriya AN SSSR, Leningradskiy filial).
271. Ul'yanovsk State Pedagogical Institute im Ul'yanov (Ul'yanovskiy gosudarstvennyy pedagogicheskiy institut im Ul'yanova).
272. Military Engineering Radio Engineering Academy of Air Defense im Govorov (Voyenno-inzhenernaya radiotekhnicheskaya akademiya protivovozdushnoy oborony im Govorova).
273. Military Command Academy of Air Defense (Voyennaya komandnaya akademiya protivovozdushnoy oborony).
274. Donetsk Physico-technical Institute AN UkrSSR (Donetskiy fiziko-tekhnicheskiy institut AN UkrSSR).
275. Moscow Electrotechnical Institute of Communications (Moskovskiy elektrotekhnicheskiy institut svyazi).
276. Institute of Physics of the Earth im. Shmidt, AN SSSR (Institut fiziki Zemli im. Shmidta AN SSSR).
277. Leningrad Institute of Aviation Instruments (Leningradskiy institut aviatsionnogo priborostroyeniya).
278. Samarkand State University (Samarkandskiy gos. universitet).
279. Moscow Institute of the Petrochemical and Gas Industry im. Gubkin (Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. Gubkina).
280. Moscow Scientific Research Institute of Eye Diseases im. Gel'mgol'ts (Moskovskiy NII glaznykh bolezney im. Gel'mgol'tsa).



- 2 1. Institute for Improving the Qualifications of Supervisory Workers and Specialists (Institut povysheniya kvalifikatsii rukovodyashchikh rabotnikov i spetsialistov).
282. Scientific Research Institute of Physics, Odessa (Nauchno-issledovatel'skiy institut fiziki, Odessa).
283. Institute of Physics of Metals, AN UkrSSR, Kiev (Institut metallofiziki AN UkrSSR).
284. Dnepropetrovsk Metallurgical Institute (Dnepropetrovskiy metallurgicheskiy institut).
285. Institute of Problems of Control (Institut problem upravleniya).
286. Institute of Biological Physics, AN SSSR, Pushchino (Institut biologicheskoy fiziki AN SSSR).
287. Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR).
288. Moscow Electrovacuum Instruments Plant (Moskovskiy zavod elektrovakuumnykh priborov).
289. Central Scientific Research Institute of Geodesy, Aerial Surveying and Cartography (Tsentral'nyy NII geodezii, aeros'yemki i kartografii).
290. All-Union Scientific Research Institute of Medical Instrument Manufacture (VNII meditsinskogo priborostroyeniya).
291. Rostov-on-Don Institute of Railroad Transportation Engineers (Rostovskiy-na-Donu inzhenerov zheleznodorozhnogo transporta).
292. Naval Academy, Leningrad (Voyenno-morskaya akademiya).
293. Moscow Institute of Transportation Engineers (Moskovskiy institut inzhenerov transporta).
294. Institute of Chemistry, Bashkir Branch, AN SSSR (Institut khimii Bashkirskogo filiala AN SSSR).
295. Institute of Chemical Kinetics and Combustion, Siberian Branch AN SSSR, Novosibirsk (Institut khimicheskoy kinetiki i goreniya SOAN).
296. Tbilis Branch of the All-Union Correspondence Electrotechnical Institute of Communications (Tbiliskiy filial Vsesoyuznogo zaochnogo elektrotekhnicheskogo instituta svyazi).
297. Institute of Chemistry, AN SSSR, Gor'kiy (Institut khimii AN SSSR).
298. Institute of Electrodynamics, AN UkrSSR (Institut elektrodinamiki AN UkrSSR).

- 299. Institute of Electronics, AN BSSR (Institut elektroniki AN BSSR).
- 300. Institute of Cybernetics, AN UzSSR (Institut kibernetiki AN UzSSR).
- 301. All-Union Scientific Research Institute of Luminophors and High Purity Substances (VNII lyuminoforov i osobo chistykh veshchestv).

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